PLASTIC BAN - A BLESSING ON URBAN WASTE MANAGEMENT OR A CLIMATE CHANGE CURSE[1]

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ABSTRACT

Jamaica, Kenya, Taiwan, France, what is one commonality among these countries? All have banned or made some restrictions on plastic and the use of polystyrene foam. In September 2018 the Government of Jamaica announced a ban on the manufacturing and importation of plastics to include single-use plastic carrier/shopping bags, expanded polystyrene foam, commonly referred to as Styrofoam and plastic drinking straws. The ban became effective on 1 Jan 2019. One positive impact of this restriction is it can lead to efficient waste management predominantly in urban areas where population density is highest and for small island developing countries like Jamaica with solid waste management issues this is a huge positive. As an alternative to plastic and polystyrene foam, paper based products are being promulgated. Will the increased demand for paper products be satisfied from recycled paper or will forested areas be cleared to satisfy this demand? What about climate change? Deforestation contributes to the greenhouse effect where there is a build up of carbon dioxide in the atmosphere which leads to warmer temperatures and for a country with limited land area deforestation is likely to occur to meet the impending demand. Several of Jamaica's major towns are located along the coast, climate change and sea level rise is of great concern and a small island developing country like Jamaica needs to concern itself with deforestation and any activity that will contribute to climate change or climate departure. This paper will examine how a national initiative such as the ban on plastic and polystyrene foam can positively impact the management of waste in the urban setting and how through the use of Urban Planning this can be achieved without adding to the existing rate of global warming thus facilitating sustainable development.

Keywords: Plastic ban, plastic and polystyrene foam, tree farming, urban planning, waste management

INTRODUCTION

The United Nations Sustainable Development Goals 11, 13 and 15 address issues relating to waste management and climate change, each supported by targets and indicators.

- Sustainable Development Goal 11 is to “make cities and human settlements inclusive, safe, resilient and sustainable”. Target 11.6 is ‘By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management’. Waste management is a common problem

[1] Paper presented at Caribbean Urban Forum 2019: “Urban Resilience’ – Disaster & Climate Change Resilience in the Caribbean. Hilton Hotel, Trinidad. 12th-14th June 2018

associated with the growth of cities and overcoming this problem can allow a city to thrive, reducing pollution and even poverty.

- Sustainable Development Goal 13 is to "Take urgent action to combat climate change and its impacts". Target 13.2 is to 'Integrate climate change measures into national policies, strategies and planning'.
- Sustainable Development Goal 15 is to "Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss". Target 15.A is to 'Mobilize and significantly increase financial resources from all sources to conserve and sustainably use biodiversity and ecosystems'.

These Sustainable Development Goals identified are of significance to this paper, as they are aimed at improving waste management, reducing the impacts of climate change and promoting the sustainable use of land resources by reducing land degradation and biodiversity loss.

It is often said 'your health is your wealth', "The health of a region is the wealth of the region" (Nassau Declaration on Health 2001) and the World Health Organization (WHO) has often stated the significance of living conditions in the urban environment as key to the health and well- being of its citizens. The ban on plastic and polystyrene foam has the potential to make managing waste less challenging, however given that paper based products are being promulgated as the alternative, the demand for the product could lead to loss of forest resources and loss of terrestrial biodiversity. To ensure the ban's effectiveness and it accomplishing the sustainable development goals identified, regulators and environmental professionals, especially Urban and Regional Planners have a key role to play in this process.

The ban of plastic bags, straws and polystyrene foam was announced in Jamaica in September 2018 and already the country has seen a reduction in the supply and usage of these items. These have been replaced to a large extent by paper based products namely: paper bags, paper straws, paper cups and paper boxes.

As the proliferation of items increase, the challenge is for regulators to identify the source of the raw materials for these products and for environmentalist including Urban Planners to ensure that our terrestrial resources are not being exploited to meet this demand. In this paper we will examine the role of urban planning in contributing to the success of the ban through the provision of the necessary planning framework thus making Vision 2030 a reality.

THE BAN

In September 2018, the Government of Jamaica announced a ban on the importation, manufacture and distribution of three types of plastic products. The ban became effective on 1 January 2019. The three (3) types of plastic products to which the ban apply are as follows:

1. **Single Use Plastic Carrier/Shopping Bags** - The ban is on the import, manufacture, distribution and use of all single-use plastic carrier bags with dimensions at and below 610mm x 610mm (24"x24") and 0.03mm (1.2mils) in thickness.

2. **Expanded Polystyrene Foam –** Expanded polystyrene foam commonly referred to as Styrofoam has a ban instituted on its importation as at 1 January 2019 and as at 1 January 2020, the ban will include polystyrene foam manufactured and distributed locally. This restriction is specifically for food and beverage containers. However the use of polystyrene foam for packaging of food items such as raw meats will be exempted.

3. **Plastic Straws** – The importation and manufacture of plastic drinking straws became Effective 1 January 2019 and as of 1 January 2021, the ban will be expanded to the importation of straws attached to lunch juice boxes and drink pouches. The ban does not apply to wax-lined paper straws or any other non-plastic straws.

The bans on the items above are administered through two (2) Ministerial Orders, the 'Trade (Plastic Packaging Materials Prohibition) Order, 2018' under the Trade Act and the 'Plastic Packaging Prohibiting Materials Prohibition Order, 2018 under the Natural Resources and Conservation Authority Act (NRCA Act). A maximum fine for breach under the Trade Act is $2million and under the under the Natural Resources and Conservation Authority Act is $50,000.

Jamaica, like Kenya, Taiwan, France and others have implemented initiatives to ban the importation, manufacture and distribution of various types of plastic products. Kenya, for instance, introduced its law in 2017 banning the production, importation and use of single use plastic bags. Taiwan's initiative comes in the form of a phased ban. As of 2019 restaurants have been banned from giving straws to customers and by 2020, the ban will be expanded to dining outlets. There will also be a charge imposed on retail stores for providing free plastic bags, disposable food containers and utensils. Additional fees will be levied in 2025 and by 2030 there will be a total ban on single use plastics. The other country to consider is France; in 2016, the country banned the free distribution of single use plastic bags and followed that up by passing new legislation to take effect in 2020 banning plastic plates, cups and utensils.

Data from beach and coastal clean-ups in 2017 indicate that plastic beverage bottles alone amounted to 21% of the items recorded. Among all plastic items collected, 35% were single-use plastics (Caribbean beaches are littered with single-use plastics. Donna Barne & Florina Pirlea. June 2019).

Table 1: Litter found in coastal cleanups (items/km)

Country/region	Litter Concentration (items/km)	Plastic Items(Bottles, Caps, Bags, Lids)	Straws-stirrers	Foam Containers	Other
Average (Global)	573	138	17	15	403
Average (Caribbean)	2014	667	61	39	1247
Jamaica	4684	2191	63	125	2305

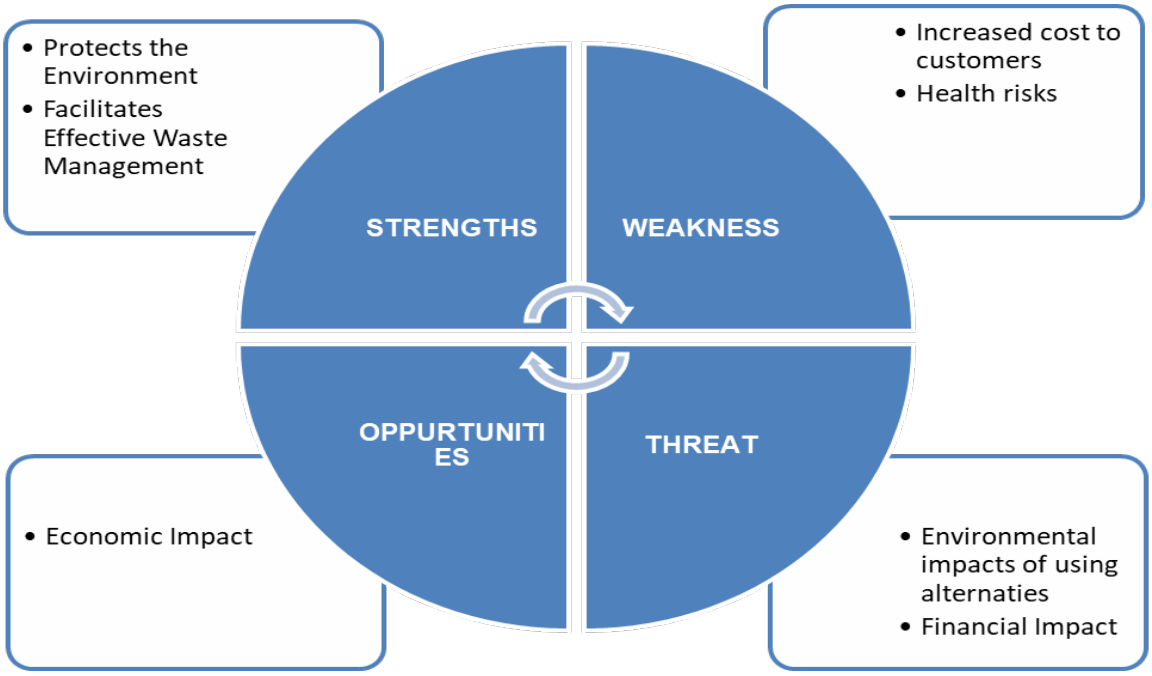
Data from: Ocean Conservancy, 2017
Source: Marine Pollution in the Caribbean: Not a minute to Waste (World Bank, 2019)

Table 1 above illustrates the high amounts of plastic in the environment. The data shows that Jamaica's average is higher than the Caribbean and global averages. Clearly urgent steps are needed to reduce the amount of plastic being generated, waste management efforts have not been significant enough to curtail the volume of plastic entering the environment. Imposing a ban on plastic can reduce pollution of the natural environment including the marine and built environment and as we have seen, bans on plastic is not a novel initiative by Jamaica, developed and developing countries are heading in that direction, however is there a case for negative impacts of this initiative? Let us explore.

SWOT ANALYSIS OF THE BAN

In Figure 1 below the strengths and opportunities represent the positive impacts of the ban, whilst the weakness and threat represent the negative impacts of the ban. The positive and negative impacts are discussed below:

Figure 1: SWOT Analysis of the ban



Positive Impacts

➢ **Protects the Environment** – The effects of plastic pollution is well documented. Plastics kill millions of animals every year, from birds to fish to other organisms (The world's plastic pollution crisis explained. Laura Parker, June 2019). Plastic waste is blocking waterways and causing flooding, which in turn spreads waterborne disease (Mismanaged waste 'kills up to a million people a year globally'. Fiona Harvey, May 2019). The lack of effective waste management to include poor garbage collection along with the failure of residents to prudently dispose of their own waste also contributes to plastic waste entering our precious environment. The ban reduces the amount of plastic entering our physical and marine environment.

➢ **Facilitates Effective Waste Management** – Plastic contributes to the generation of waste, Straws, bags, bottles and food containers are all items seen lining our drains and gullies (Figure 2).

Figure 2: Plastic waste in drains

The concept of refuse, reduce, reuse and recycle has been mentioned but this has to be accompanied by social intervention promoting behavioural change along with practical and creative incentive measures for this concept to bring significant reduction in the waste generated. With a ban now on certain plastic packaging material, the amount of solid waste generated will be greatly reduced. With less solid waste to be collected, the struggles faced by garbage collection entities become minimal and efficient strategies can be administered such as separate trucks and receptacles to collect items for disposal separate from recyclable items.

- **Economic Impact** - It opened up the opportunity for entrepreneurs. Companies and individuals have gone into the manufacturing and sale of reusable bags. Outside of supermarkets and retail stores, individuals can be seen with reusable bags of different sizes, shapes and colours for sale. An article published in the *Jamaica Gleaner (September 26, 2018)* noted that the impending ban is likely to create a market opportunity for suppliers of alternative packaging valued at around $3billion.

These positive effects identified suggest that the ban is relevant and worthwhile however as shown in the SWOT analysis there are weaknesses and threats to this ban which are discussed below as negative impacts of the ban.

Negative impacts

- **Increased cost to customers** – Prior to the restriction, customers were issued plastic bags free of cost when shopping at wholesale and retail outlets, which has since changed. Now, they are required to take their own shopping bag or purchase a reusable bag for as much as $150 (Jamaican) or a paper bag for $20 (Jamaican) to take away their goods. Imagine doing your monthly shopping and having to purchase paper bags or reusable bags, maybe even as much as 6 at a time, it's an additional cost, one which wasn't expected and while it is minimal, for some, it can be quite a stretch.

- **Health risks - Re-usable bags are not sanitary** – how often do we wash our re-usable bags? The answer is not often enough. A 2010 study done by The University of Arizona, reported that 97% of people who use reusable bags are not aware that they should wash and sanitize them regularly. In the same study, half of the bags used were found to be contaminated with coliform bacteria including E.coli in high enough amounts to pose serious health risks. In warmer climates like Jamaica, the risk of bacteria growth is ever present. The bacteria could

spread from shopping bags to shopping trolleys/carts to check-out counters where it could easily be transmitted to other food items creating a potential health risk for consumers.

- **Financial Impact** – The ban on plastic and polystyrene foam decreases the demand for these products, a lower demand will eliminate the need for these manufacturing jobs, rendering many unemployed. One local company will cut its workforce by 20%, (Plastic Maker To Cut Jobs, After Rejection Of Ban Alternative, Jamaica Gleaner, 30 December 2018). Another article published on loopjmaica.com noted that one local manufacturer stated that the ban on plastic and polystyrene foam will affect the company's revenues negatively by about $1 billion. Companies would have invested in equipment and staff geared at manufacturing these products, the ban now means that these companies have to re-brand, re-tool and retrain staff, if the intention is to continue in the manufacturing industry, and this comes at high cost and will no doubt result in losses at least in the short to medium term.

- **Environmental impacts of using the alternatives -** Alternatives to plastics that are generally promoted are paper and bamboo based products. Paper is essentially made from wood-pulp sourced from trees. The paper and pulp industry is one of the biggest drivers of deforestation in Indonesia, accounting for roughly 20% of deforestation in the 2000s (Paper and Rainforests, R. Butler 2012).To meet the increasing demand for paper-based products, forested areas with mature trees will have to be removed, the result is deforestation and while replanting will have to be done, the demand for paper would result in trees being cut at a rate faster than replanting of trees and growth to maturity of said trees will allow. This deforestation will facilitate climate change and all its impacts in an era where the focus is on climate change mitigation and adaptation.

An article published on the Jamaica Information Service website states that 'Within the last few years, the effects of climate change on Jamaica have become more apparent. Some of the ways in which climate change has affected Jamaica include: more severe hurricanes, increase in heavy rainfall, longer periods of drought and erosion. The article also noted that Jamaica is also signatory to many climate change mitigation and adaptation initiatives such as the 'Paris Agreement', which seeks to guide the treatment of climate change by limiting the rise of the global temperature below 2˚ Celsius, there is also the 'United Nations Framework Convention on Climate Change' which seeks to regulate Greenhouse Gas Emissions.

Being signatory to these agreements means as a country Jamaica cannot undertake any initiative that would not support climate change mitigation and adaptation. Whilst the literature supports a reduction on the manufacture and use of single use plastics because of their contribution to global greenhouse gas emissions and climate change (Plastic & Climate: The Hidden Costs of a Plastic Planet, May 2019), it is important to realize that a ban on plastic has the potential to contribute to climate change, therefore the government and policy makers have to be very cautious in its implementation.

SUSTAINABLE WASTE MANAGEMENT AND URBAN PLANNING

Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs (Brundtland Report 1987). Urban and Regional Planning is a spatial design practice that enables living creatures to live while planning the interventions to ensure suitability to ecology, geology, climate and land structure since intervention in nature should be balanced (An Overview of Urban and Regional Planning, Yasar Ergen, 2018). Sustainable development and by extension the sustainable

management of waste is essentially a key area of urban planning and development and as such there is an important role for urban planning in the effectiveness of the plastic ban.

The Role of Urban Planning

For the ban on plastic packaging material and polystyrene foam to be effective, it has to be entrenched in our planning systems. This means that while legislation has been enacted to support the ban, other policies and guidelines on acceptable alternatives are needed. From a core planning perspective there are three (3) vital areas that must address the plastic ban. These are: Planning Documents, Development Approval Process and Monitoring and Enforcement. Each of these will be considered below and the role these play in achieving sustainable waste management. The planning documents to be considered are the Spatial Plan, Development Plan and the Development Order and are discussed in Table 2 below.

Table 2: Planning documents for the plastic ban

Planning Documents	Definition/Purpose	Benefits
Spatial Plan	Spatial planning is the synchronization of practices and policies' affecting spatial organization, meaning it shapes the distribution of people and activities. In essence the spatial plan is a document that outlines how people, infrastructure and activities are distributed in a given space and it is centered on the location and distribution of land use activities. The spatial plan for the island is currently being developed and good planning practice dictates the ban is taken into consideration when determining land use patterns, establishing areas for urban development, agricultural development, conservation and preservation areas.	✓ The benefits this provides is that areas for tree farming for paper production can be identified and plans can be made to see how much harvesting can occur over certain periods of time to ensure sustainability and thus not resulting in deforestation and contributing to climate departure. ✓ Another benefit to the spatial plan is once areas are identified for residential and commercial development, waste management initiatives can be put in place. Instead of providing trucks to take tons of garbage to landfills, investment in recycling could be explored. The provision of trucks for separate uses such as e-waste, other hazardous waste such used batteries and recyclables are just a few options that can be explored. Not only will the amount of waste entering our landfills see significant reduction but also the risks posed by landfill fires will be greatly reduced.
Development Plans	The World Bank defines development plan as a long term planning document that gives a conceptual blueprint to guide future growth and development of a	✓ The importance of this to the ban and waste management is similar to the spatial plan; land uses will be clearly identified. However with a focus on economic gain, the development plan will

	particular area. Through public participation and other planning initiatives, development trends, physical, social and economic conditions it provides analysis, recommendations and proposals for a site's population, economy, housing, transportation, community facilities and land use. With its focus on development trends, physical and economic conditions, a development plan paves the way for cities or municipalities to guide and foster development.	outline in more detail how areas set aside for tree farming is to be developed. Trees take years to mature and so the sustainability for paper production is in question, this opens the opportunity for the exploration of hemp paper. Hemp paper is made from the hemp plant which can mature in as few as 100 weeks. Agricultural lands are being converted into housing, it's an opportunity to explore hemp production on some of these lands, it provides an opportunity for growth in the manufacturing industry. ✓ With a sustainable structure in place, markets for finished products can be explored and sought after, from this, linkage industries can be created which can limit the waste produced from manufacturing since this waste can become the raw material for another industry. ✓ From a more direct waste management perspective, the development plan can likewise outline a waste management plan for the area to which it covers. Included would be setting up initiatives to encourage growth within the recycling industry, such initiatives could be tax breaks, or waiver of fees associated with the setting up and operation of businesses involved in the industry. Once these entities are operational, to facilitate further growth within the industry, establishing feasible drop off locations for recyclable items becomes paramount and this too is an area that the development plan will cover when focusing on waste management.
Development Order	The spatial plan speaks to how people, infrastructure and activities are distributed in a given space. From the spatial plan comes a development plan, a blueprint to guide development in a given area. The development plan will now guide in the formation of the development order which is a legal document that guides development in the area to which it applies. The entire island has only recently been covered by Development	✓ In encouraging the effectiveness of the ban, the policies will discourage not just the use of the banned items but also other similar plastic or polystyrene products not banned whilst at the same time promote the use of alternatives in a sustainable way. ✓ In considering the spatial plan, identifying areas for land uses were mentioned, the development order will apply specific zoning to these land uses along with the supporting policies. Once an area has been zoned for tree farming,

	Orders, however revisions are now to be prepared on a five year cycle; this facilitates the inclusion of revised zoning, local area policies and sectoral policies.	the supporting policies will ensure no other activities unless its ancillary to the tree farming will be supported in the area so zoned, hence preserving the area for only the use zoned for. ✓ Existing forested areas will be attractive for reaping for paper production, the development order will negate this by zoning these areas as conservation, preservation and protected areas, once they satisfy the respective zoning requirements.

Development Approval Process

Development approval process will also play a vital role. For small island developing territories, where many development projects are undertaken by private developers, the development approval process will play a crucial role in ensuring the sustainability of the ban. How so? Through the use and application of the planning documents discussed above. Proposals for development will be assessed by the Planning Authority and it's their responsibility to be stringent in its review process ensuring that proposals satisfy the requirements outlined in the planning documents. *To illustrate, here is a hypothetical scenario; an area has been zoned for tree farming, an investor is interested in establishing a theme park in this area, at first glance, a proposal of this nature may not seem detrimental, however it is contrary to the zoning proposed. What will the local authority do, will they look favorable on such a proposal given its potential economic impact to that area or will they abide by the zoning and policies of the planning documents?* Giving in to such a proposal is what will make the ban ineffective, the areas set aside to facilitate tree farming will be lost, it will create a drive into conservation and protected areas and this is where the sustainability will be reduced and the effects of climate change will become even more apparent. If the Planning Authority refuses these proposals, it sends a clear message to investors that proposals contrary to zoning and their policies will not be considered favorably. What about proposals that satisfy the requirements of the respective planning documents? When a development is approved, there are conditions attached to the approval to which the development must satisfy. Conditions should be included to force developers to dispose of their waste at approved facilities or to ensure their waste is collected by reputable waste collection companies and should also provide the necessary infrastructure to facilitate collection. *Examples of conditions to be utilized could read:*

- *The developer should ensure their waste generated from the construction and operation of the development is transported to and disposed of at the municipal landfill.*
- *If the developer proposes to use a private contractor to transport and dispose of waste generated throughout the construction and operation of the facility, a contractual agreement with said private contractor should be submitted to the Planning Authority.*
- *The developer should provide receptacles to facilitate waste separation.*

Monitoring and Enforcement

Conditions without appropriate enforcement are useless. In order for the approval process to fully impact on any ban proposed, monitoring and enforcement is just as vital. Once the conditions are placed in the approval document, it becomes the role of the Planning Authority to monitor these developments; ensuring developers are abiding by conditions given. It is also the responsibility of the Planning Authority to conduct routine monitoring exercises to ensure illegal development does not occur, doing this safeguards land use zoning as well as conservation and

preservation areas. If conditions are not being followed or illegal development has been identified, the necessary enforcement action should be taken which will aid in bringing developers into compliance.

CONCLUSION

The aim of this paper is to show the importance of Urban Planning to the ban on plastic and polystyrene foam. The ban is a national initiative, one which has implications to sustainable development. Plastic and polystyrene foam has been having a deleterious effect on our environment for years, something that warrants immediate action.

The United Nations Sustainable Development Goals 11, 13 and 15 each supported by targets and indicators are aimed at improving waste management, reducing the impacts of climate change. The ban on plastic, whilst just a first step will lead to more effective management of waste, however, with the alternative to these items being largely paper based products, it is imperative that Urban Planners and other environmental professionals play their part in ensuring the framework is in place to support the ban whilst preventing an unmanaged and unregulated rush for the paper based alternative which will have implications for climate change.

'Vision 2030', aims to make Jamaica the place of choice to live, work, raise families and do business by 2030. For this to become reality, Planning Documents such as the Spatial Plan, Development Plans and Development Orders need to be prepared with a view to the ban. Tree farming is a must to support the initiative, this makes zoning and land use policies vital to the process. Once these are in place, it now becomes the role of the Planning Authority to use these documents in assessing development proposals along with administering conditions of approval that will facilitate sustainable cities and communities, combatting climate change and its impacts and promote the sustainable use of land resources by reducing land degradation and biodiversity loss.

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