

Toward A Reasonable Round Economy for Cigarette Butts, the Most Well-Known Squander Overall On the Coast

Irina Safitri Zen*

Department of Environment Management, Universiti Teknologi Malaysia, Johor Bahru, Malaysia

Abstract

The round economy depends on the most extreme utilization of assets by decreasing, reusing, and reusing the components utilized. As of now, the things littered most often on the planet are Cigarettes Butts (CB) as these flotsam and jetsam are unreservedly dispersed in the marine living space, they are by and large hard to gather and extremely complex to reuse. Litter CB is an extraordinary social issue that creates unreasonable monetary expenses and serious natural issues. CB is likewise not biodegradable and profoundly poisonous to marine organic entities and presents a particular combination of physical and compound pollution. Nonetheless, little examination has been finished on the administration and reusing of this perilous waste. A few propositions have been made to integrate this loss into high-volume articles of direct creation or reusing, however assortment planned operations are missing since the on-going framework is wasteful, notwithstanding the poor natural way of behaving of residents. This work presents an on-going blend of the CB issue from all its potential viewpoints to have a worldwide vision of the existence pattern of the CB, demonstrating both the known and the holes in the information on every one of them, and plans to give a general blueprint of the moves toward follow to attempt to end such a stressing issue at the worldwide level.

Keywords: Ecological harm • Trash the executives • Innovative headway • Financial repercussions • Social showcasing

Introduction

Today, the roundabout economy system is important to limit environmental change and to attempt to accomplish better natural maintainability by staying away from the persistent loss of biodiversity brought about by expanding contamination and other ecological tensions. This technique, took on by the European commission in walk 2020, is one of the principal achievements of the European green arrangement. The new mind-set of modern/business models that address squander as a huge scope asset will be upheld by the standards of the ecological administration framework and will take on drives in light of 'R' techniques (e.g. reuse, reuse, remanufacture, rearrange, update, recuperate, lessen, and so forth), likewise producing cost reserve funds and income development and furthermore assisting with making new neighbourhood occupations. Among the techniques of the new roundabout economy in Europe, measures have been intended to moderate marine litter and defilement on sea shores. At present, the thing littered most often on the planet is Cigarettes Butts (CB). In 2016, around 5.7 billion cigarettes were sold, of which 4.95 billion (identical to >845,000 tons) were not as expected discarded in the climate, in light of the fact that

75% of smokers toss their CB on the ground even openly spaces [1]. This waste is openly scattered in the climate, is non-biodegradable, contains 15,000 strands of filaments and north of 7000 harmful synthetic compounds that are delivered into the marine climate and cause serious environmental and monetary worries [2].

In addition to the fact that these build-ups be can found all over, yet they are likewise pricey and challenging to gather, and the comparing costs are not borne by the people who benefit monetarily from this item or by the individuals who consume it, however it is the obligation of all residents [3]. Hence, the age of these disposed of CBs comprises an illustration of a negative externality. An externality seems when the movement of at least one monetary specialist influences individuals who don't partake in that action. Market analysts have shown that externalities lead to wasteful asset portions, and therefore government intercessions can be legitimate [4]. Albeit the financial and natural harm brought about by CBs is undeniable, moving toward this issue isn't high on the political arrangement of the European monetary people group.

For instance, the European Waste Rundown doesn't think about CB as a particular thing, yet rather it is considered 'Metropolitan waste including independently gathered portion/Independently

*Address for Correspondence: Irina Safitri Zen, Department of Environment Management, Universiti Teknologi Malaysia, Johor Bahru, Malaysia; E-mail: safitriirazen.ml@yahoo.com

Copyright: © 2023 Zen IS. This is an open-access article distributed under the terms of the creative commons attribution license which permits unrestricted use, distribution and reproduction in any medium, provided the original author and source are credited.

Received: 21 September, 2022, Manuscript No. ARWM-22-75419; **Editor assigned:** 26 September, 2022, PreQC No. ARWM-22-75419 (PQ); **Reviewed:** 11 October, 2022, QC No. ARWM-22-75419; **Revised:** 09 December, 2022, Manuscript No. ARWM-22-75419 (R); **Published:** 03 January, 2023, DOI: 10.37421/2475-7675.2023.8.249

gathered division/Different portions not in any case determined'. All the more as of late, Order (EU) 2019/904 of the European parliament and of the Gathering, directs a few parts of CB as a feature of diminishing the effect of a few plastic items on the marine climate; nonetheless, it demonstrates that different assortment of this hurtful waste ought not to be obligatory. In this manner, down to earth functional angles are missing, specifically at the administrative level as for CB yet trash as a rule, as current regulations are illogical to apply at the singular level and are useless in staying away from trash from being gathered in the climate. Subsequently, it is suggested that, notwithstanding regulation, policymakers advance toward additional fundamental practices, like state funded training, and resident mindfulness through natural public missions pointed toward expanding ecological mindfulness and advancing supportive of ecological way of behaving [5].

Presently, it is quite far from having the option to supplant these pointless and hurtful channels on the tobacco market. Since they previously showed up during the 1850's, CBs, produced using non-biodegradable cellulose acetic acid derivation strands, have been an endeavour to diminish the mischief tobacco can cause to the smoker. In spite of the fact that there is as yet an overall conviction that CBs decrease breathed in poisons and consequently lessens the mischief of smoking, they really offer no medical advantages and, surprisingly, their inhaled strands increment the harm to the smoker. Thusly, CBs present a twofold issue: Not in the least do they not diminish wellbeing gambles for smokers, but rather they likewise collect in the climate, producing a lot of non-biodegradable waste. In the 21st 100 years, new gadgets have been made for the market of nicotine items, like electronic cigarettes, and Intensity not-consume (HnB) gadgets, a tobacco bar comparable in plan to traditional cigarettes, with a low-thickness cellulose acetic acid derivation channel, polymer, and paper. Because of this closeness among HnB and CB, the natural effect of the new gadget isn't just negative for amphibian creatures yet may try and be more prominent than CB, as the tobacco bar keeps around 70% of the nicotine and this poison is delivered, when inappropriately discarded, into the climate. One more option in contrast to normal cellulose acetic acid derivation channels has been channels produced using unadulterated and completely biodegradable cellulose nonetheless, these biodegradable channels would keep on releasing risky synthetic substances into the marine climate in the event that they are discarded in a lacking way. Truth be told, the adverse consequence on the dirt bacterial local area was much more prominent than that created by non-biodegradables, and huge poisonous impacts for marine spineless creatures have likewise been shown. Besides, supplanting these biodegradable channels could support the confidence in the overall population that CBs without plastic are less hurtful, re-establishing and helping just the tobacco business by being an extraordinary showcasing opportunity by promoting them as an organization with high friendly obligation. Some tobacco organizations considered eliminating the channels, however since most smokers were so used to CB that they wouldn't utilize them, they have considered it monetarily unworkable. Consequently, in spite of being named the "deadliest misrepresentation throughout the entire existence of human civilization", no organization has reviewed the channels of the cigarettes it makes, with very nearly a 90% presence in the worldwide tobacco market, leaving a significant ecological issue irritating [6].

At last, regardless of the huge measure of CB created in human networks, no enormous scope the executives and reusing strategy for this dangerous waste has been created. Multiple approaches to reusing CB have as of late been examined recuperating valuable assets from CB squander. In any case, the direst issue in the administration and reusing of CB is wasteful assortment because of its scattered area in the climate, little size, and troublesome isolation from the remainder of the gathered waste. As of recently, most nations have unloaded them along with other trash in landfills and at times burned them, creating poisonous vapour that truly dirty the air, which has driven the world wellbeing association to proclaim the presence of CB in landfills hazardous. Thusly, it is fundamental for track down powerful administration answers for this waste, as customary removal strategies, landfilling, or cremation are not natural or monetarily practical for this reason. So, the issue of CB is exceptionally complicated, since it has a social, monetary, natural, and mechanical part that, despite the fact that they have been tended to freely in late bibliographic surveys, have not been dealt with together. This work presents an on-going combination of the CB issue from all its potential perspectives to have a worldwide vision of the existence pattern of the CB, showing both the known and the holes in the information on every one of them. What's more, this work expects to give a general diagram of the moves toward follow to attempt to end such a stressing issue at the worldwide level [7].

Literature Review

The unnoticed issue of CB to the climate

The CBs positioned first in overflow in trash gathered yearly on sea shores all over the planet, accomplishing upsides of up to 40% of the all-out marine flotsam and jetsam gathered. During a wide range of cleaning exercises all over the planet, CBs are the most tossed trash things on earth, which makes them, because of their natural and environmental harm, one of the most significant and troubling squanders around the world. Being hard to gather as litter and not biodegradable, CB stays in the climate even subsequent to cleaning by nearby specialists as well as coordinated trash assortment occasions. Albeit a few examinations have shown a more prominent gathering of CBs in specific spots in urban communities, for example, the regions around store focuses, parks, bar patios, eateries, CB fixation is much higher in broad daylight sea shores. Furthermore, on sea shores, because of unpredictable and wasteful clean-up projects and clean-up teams, CBs persevere longer than those shed in metropolitan settings, permitting more poisons to drain into the marine climate.

For what reason are CBs so perilous to the climate?

Albeit the effect of tobacco on human wellbeing is notable, the natural effects got from the unpredictable end of CB stay unsure. CB has been delegated risky as per European shows. Truth be told, CBs are a remarkable sort of waste since they cause twofold defilement: physical and substance. Physical on the grounds that different marine species (fish, turtles, whales) can ingest them, entire or part of them, coincidentally while taking care and it is likewise an expected wellspring of microplastics by separating them into microfibers. Synthetic, in light of the fact that >7000 harmful substances can drain

into the climate, a large number of which are exceptionally risky to any living life form.

CB is an important wellspring of micro plastic filaments

The material that makes up 90% of the CBs is an engineered polymer gotten from cellulose accomplished through acetylation and the expansion of plasticizer compounds. Because of this piece, CBs are incorporated among plastic things in many distributions that concentrate on marine flotsam and jetsam all over the planet; albeit as of late a few creators thought of them as a disengaged classification, principally in view of their overflow. Of the typical 8 million tons of plastics delivered into the marine climate every year, somewhere in the range of 0.3 and 0.8 million tons relate to CB. CB sheds around 100 little microfibers (<0.2 mm) every day from the >15,000 fiber strands it contains, and that conduct can stay for as long as 30 years as they are non-biodegradable (<15% yearly weight reduction and have an exceptionally low disintegration rate in seawater. A few ecological circumstances, like openness to daylight, high temperatures, or UV radiation, cause slow corruption and fracture of CBs. In particular, photooxidation would be the primary component of CB corruption on sea shores, with lower debasement rates in water. Whether or not unsmoked or smoked, CBs can separate and continue as plastic miniature or nanofibers that are possibly exceptionally unsafe to the verdure of earthbound and sea-going biological systems.

CB adsorption and desorption conduct

In spite of the fact that unsmoked CBs are hazardous to the climate, when smoked, the gamble is a lot higher, since when they connect with water, a few inorganic and natural mixtures are filtered and become bioavailable to oceanic life. Around 7000 compound substances can be spilled from CB, of which 200 (44 in enormous amounts) can possibly be cancer-causing or mutagenic and subsequently exceptionally harmful. A portion of these substances are nicotine and its subsidiaries, weighty metals, polycyclic sweet smelling hydrocarbons (PAH), and Benzene, Toluene, Ethylbenzene, and Xylene (BTEX). Given the intricacy and number of harmful substances present in CB, it is truly challenging to decide the spillage capacity and bioavailability of every one of these pollutants. A portion of these poisonous substances of CB have fast and prompt delivery in regular waters, while others have an increasingly slow progressive delivery.

Nicotine promptly filters out of the CBs into water after just a single day (50% currently delivered in only 27 min and is moved to the silt in the span of 5 days, where it continues for something like 60 days. Conversely, PAHs from CB debase water in the long haul, with an exceptionally unsafe bioavailability, arriving at fixations that surpass the principles of both the Water Structure Order (WFD) and the current quality rules for drinking water, yet don't effortlessly move from CB to silt in sea-going medium. An expected measure of 4.96 lots of ΣPAH are delivered yearly into the climate overall from CB, naphthalene (4.2 tons) and acenaphthene (0.88 tons). At long last, the pace of CB weighty metal spillage to the climate increments with expanding diligent time (up to 9.7%) and mugginess in the climate (up to 17.1%) with Ni, Pb, Ti, and Zn let out of the main day of openness to the climate. By and large, the most noteworthy delivered

focus is Zn and the least is Compact disc. As indicated by Farzadkia et al, CB can deliver a scope of 147.5 kg and 57.3 kg of weighty metals into the climate consistently.

CBs leachate is poisonous to amphibian life forms

Albeit the poisonousness of CBs on the biota in amphibian and earthly environments, from microorganisms to mice, has been contemplated, the scope of life forms and territories tried is little. It is at present realized that CBs can influence the development, conduct, and regenerative execution of creatures in each of the three living spaces, with the impacts on epicontinental organic entities being the most considered. In this natural surroundings there are deductively applicable models that show poisonous impacts on their life forms concerning physiological reactions and conduct; while there are not many models in marine creatures, in spite of the fact that it appears to be that the general impact related with BC leachates in this climate is more grounded than those happening in freshwater. CBs unfavourably influence marine untamed life either through smoke garbage snare and direct ingestion or through ingestion of sullied micro plastics delivered by CBs that could be destructive to people who consume these creatures.

Marine investigations remember works for microscopic organisms, diatoms, foraminifera green growth, macroalgae molluscs (gastropoda *Austrocochlea porcata*, *Nerita atramentosa*, *Bembicium nanum*) and bivalves *Mytilus edulis* scavengers *Acartia tonsa* Oliva et al. different copepods, worms (*Hediste diversicolor*, *Ficopomatus enigmaticus*), echinoderms (*Paracentrotus lividus*), and fish (*Atherinops affinis*). Nonetheless, the outcomes are heterogeneous because of the CB assortments (new or old), openness time (generally exceptionally short 24-96 h), CB types and brands, endpoints analyzed, leachate focus, and species examined. Most examinations (~80%) have utilized CB leachate, rather than the more ecologically practical situation of all out CB. Besides, the majority of these examinations were done utilizing filtered CB disregarding the motor desorption of CB, with the exception of Santos-Echeandía et al. nor the open framework that is the marine climate, with the exception of Green et al. with stream and, subsequently, consistent substitution of water. Scarcely any examinations have inspected the bigger environmental effects of CB on populace levels or species variety, no investigations have been acted in situ or on the working of the biological system, and a couple foster in marine dregs, the most certain last objective of CBs. Truth be told, the perpetual quality of CB in various marine conditions, like the surface, the water section, or residue, will play a deciding job in the poisonousness of their contaminations in marine creatures. CBs at first drifted in the water for a variable period (3-20 days) prior to sinking. This changeability in lightness relies upon the thickness and saltiness of the water, with the porosity of the paper and the cellulose acetic acid derivation strands assuming a significant part, as they influence the porousness to water. For this large number of reasons, two significant viewpoints should be considered while deciding the poisonousness of CB in marine biota: the lightness of BCs and their travel through the different water compartments (surface, water segment, and base) since the arrival of synthetic mixtures changes after some time, and the degree of CB corruption connected with its desorption energy. It is likewise pressing that the benthic framework

is concentrated on in significantly more detail, since it is a critical compartment for the ecotoxicological assessment of CB.

Inappropriately disposed of CBS are extravagant

The thickness of CB near the ocean can be considered as a sign of the contamination brought about by its clients at least 2018 explicitly of the natural familiarity with public or worldwide the travel industry and of the productivity of public guideline, legitimate or cleaning. The recurrence of ocean side cleaning is vital for the travel industry since guests are particularly intrigued by seaside the travel industry; consequently sea shores are a critical calculates this market. In 2019, there was a worldwide expansion in global traveller appearances of 4% (1.5 billion individuals), an increment that is likewise expected for 2020, regardless of current wellbeing vulnerabilities. This affirms not just that travel industry is one of the world's driving worthwhile enterprises, yet in addition that it is a versatile monetary area. This is particularly obvious in seaside nations with a calm environment, like Spain, the second most visited traveller objective on the planet (that is, with 83 million vacationer appearances producing US\$73 billion of every 2018. The quality and tidiness of the ocean side stay key dynamic variables in the decision of a seaside objective by guests. Subsequently, the stylish worth of the seaside view drives the travel industry economy. Hence, it is of extraordinary worry that up to 97% of the monetary worth of an ocean side might be lost because of contamination as travellers diminish up to 60% their visit on the ocean front assuming it is grimy, as well as remarkably decreasing their fulfilment, so they would most likely not get back to that spot for excursion. Besides, the twofold gathering of litter on an ocean side could lessen the view of personal satisfaction by nearby inhabitants by up to 90%. The extraordinary expansion in the mid-year populace in waterfront the travel industry objections causes different hard to oversee issues, like the expansion in litter on the sea shores. As a matter of fact, the quantity of CB kept on sea shores during summer (traveller season) can twofold contrasted with different seasons.

A programmed terrible social propensity: Littering CB on the climate

CBs are the most programmed natural delivery litter and this uninvolved litter isn't simply more impervious to social change than dynamic litter, yet it is additionally less obvious as in it is doubtful to have negative social repercussions. Most residents, smokers and non-smokers, perceive the propensity for CB littering in the climate as an uncensurable standard. Different variables leaning toward the commonness of this negative behaviour pattern are the absence of consciousness of regardless of whether CB is a litter of canisters or that they are excessively far the little size of CB and its terrible smell and unfortunate policing littering. Smoker qualities like absence of moral obligation or absence of 'a cognizant exertion' or worry for legitimate removal of CB, and sluggishness in tracking down waste can likewise impact littering. One more generally referred to pardon for littering is the presence of prior CB litter nonetheless, more data on the sentiments and convictions of smokers that produce or reinforce the CB littering conduct of every nation is expected to foster powerful methodologies for the disposal or impressive decrease of this extremely hurtful litter.

Reusing CBS: Innovation is almost prepared

To decrease the effect of CB contamination, a powerful and down to earth reusing methodology is required that is both harmless to the ecosystem and creates valuable, non-unsafe new items through sound, contamination free cycles. This production of significant worth for disposed of CB not just assumes a fundamental part in diminishing the unfortunate removal of this thing by forestalling natural and financial effect, but at the same time is basic in adding to a successful roundabout economy. The pressing need to reuse this unsafe waste is reflected in the enormous number of late distributions exploring various conceivable reusing techniques for littered CB. Truth is told, over the most recent three years a few bibliographic surveys have been done on the conceivable recuperation of this waste, in which the suitability and maintainability of the reusing techniques examined, as well as their constraints and difficulties, are talked about. Torkashvand and Farzadkia characterized CB reusing and reuse techniques as per the piece of this trash utilized (all CB, the synthetic substances caught in its channels, or the cellulose acetic acid derivation it contained). Then again, Marinello et al. characterized them as per the business wherein side-effects got from CBs were to be utilized or taken advantage of Kurmus and Mohajerani, and Wang et al. inspected eleven proposition for CB reusing techniques, while Moroz et al. considered eleven distinct utilizations of reused CB and gave a point by point rundown of proposed reusing reads up proposed for CB the board. At long last, the various items acquired by reused CB were remembered for nine classes as indicated by Yousefi et al.

The conceivable answer for the bottleneck of CB the executives: Change in residents' practical way of behaving.

Albeit a few examinations have added to a superior comprehension of CB littering conduct, most have given just restricted data and utility to lessen CB litter. Nonetheless, accomplishing an adjustment of the way of behaving of residents so they quit littering the climate as indicated by the round economy methodology ought to be the objective of every European government. On account of CB, it is vital for keep exploring the impacts they have both on the climate and on their living beings. As a matter of fact, the information produced by science is a fundamental beginning stage for creating mindfulness techniques and reasonable conduct changes in current and future populaces, to protect the planet and its biodiversity. To bring issues to light and carry out additional capable ways of behaving in youngsters, instructive projects that address these ecological issues have been expanded in schools and numerous colleges in certain nations. In any case, it is important to go further, mindfulness based approaches will generally have issues changing over transmission of information into supportable ways of behaving of residents which are fundamental in natural issues, and in this manner showcasing as a generator and facilitator of significant worth trades can assume an essential part. In particular, "showcasing is the action, set of establishments, and cycles to make, impart, convey, and trade offers that have an incentive for clients, accomplices, and society overall" yet, research that utilizes social promoting strategies to lessen squander isn't just scant yet ordinarily the methods are twisted.

Discussion

Social promoting chips away at esteem added recommendations of ways of behaving, considered prosocial, including those that have to do with really focusing on the climate and that take as items those ways of behaving that are expected to be forever solidified in citizenship similar to the instance of not tossing CB. Obviously, the populace should have something as a trade-off for laying out supportive of ecological ways of behaving, something that comes from the logical exploration about the impacts of CBs on the climate and the populace. Duane adjusted the idea of relationship showcasing, an arrangement to advance long haul palatable connections between two sections when trades occur, to social promoting in view of Morgan and Chase. Along these lines, two social develops are laid out in the administration of trades: Trust, the apparent readiness and security of relying upon the gatherings keen on the trade, and responsibility. As to esteem added proposition, in promoting, esteem is laid out as compromise of advantages and forfeits that residents see from the items proposed to them. Specifically, contingent upon whether the item is substantial, trade esteem is laid out on the off chance that what is offered are administrations, it is called experience esteem and assuming it is about ways of behaving, as on account of natural consideration, it is about social worth. In particular, contingent upon whether the item is substantial, trade esteem is laid out on the off chance that what is offered are administrations, it is called experience esteem and assuming they are ways of behaving, as on account of ecological consideration, it is about social worth. One more idea added to social showcasing significant for this instance of CBs is esteem in setting. Esteem in setting considers the perplexing communications that occur between the different trade's entertainers in the social circle so the outcome would be a blend of aspects from the miniature, meso and macro environment. The subsequent framework, albeit functionally muddled, considers the co-production of significant worth between the various entertainers engaged with the trade cycle. Notwithstanding, it works from a foundational thinking approach thinking about all entertainers concerning the ecological issue that is planned to be tended to, for this situation, the harm to coasts and seas and to residents overall.

Conclusion

The plan of a model that permits this compromise to be laid out would prompt the formation of a social promoting effort, laying out crusade subjects in view of the consequences of the exploration, a mission that is proposed in this paper as a potential approach to changing the examination, which would suggest testing and laying out activity intends to check the conduct changes that said missions

could accomplish. Hence, this work proposes further exploration in the ecological field to dive into the harm that CB causes in the seas and their creatures, as well as in the mechanical field, to lay out a beneficial framework to reuse this trash. This data, along with the monetary costs got from ocean side cleaning, shouldn't simply be sent to the overall population to support their mindfulness that disposed of CBs are not the finish of the tobacco life cycle, however ought to likewise be utilized in the social showcasing efforts that should be done to accomplish that genuinely necessary change in the general public's way of behaving to end the rule of >40 years as the world's main trash.

Conflict of Interest

None.

References

1. Acosta-Coley, Isabel, Dario Mendez-Cuadro, Erika Rodriguez-Cavallo, and Jesus de la Rosa, et al. "Trace elements in microplastics in Cartagena: a hotspot for plastic pollution at the Caribbean." *Mar Pollut Bull* 139 (2019): 402-411.
2. Ajzen, Icek. "The theory of planned behaviour: Reactions and reflections." *Psychol Health* 26 (2011): 1113-1127.
3. Ajzen, Icek, and Martin Fishbein. "A Bayesian analysis of attribution processes." *Psychol Bull* 82 (1975): 261.
4. Akhbarzadeh, Razegheh, Sina Dobaradaran, Gohar Parhizgar, Torsten C. Schmidt, and Reza Mallaki, et al. "Potentially toxic elements leachates from cigarette butts into different types of water: A threat for aquatic environments and ecosystems?." *Environ Res* 202 (2021): 111706.
5. Alberti, Stefano, Maria Sotiropoulou, Elena Fernández, Nicoleta Solomou, and Eleftheria Psillakis, et al. "UV-254 degradation of nicotine in natural waters and leachates produced from cigarette butts and heat-not-burn tobacco products." *Environ Res* 194 (2021): 110695.
6. Al-Khatib, Issam A, Hassan A Arafat, Raeda Daoud, and Hadeel Shwahneh, et al. "Enhanced solid waste management by understanding the effects of gender, income, marital status, and religious convictions on attitudes and practices related to street littering in Nablus–Palestinian territory." *Waste manag* 29 (2009): 449-455.
7. Al-Mosa, Yara, Joy Parkinson, and Sharyn Rundle-Thiele. "A socioecological examination of observing littering behavior." *J Nonprofit Public Sect Mark* 29 (2017): 235-253.

How to cite this article: Zen, Irina Safitri. "Toward A Reasonable Round Economy for Cigarette Butts, the Most Well-Known Squander Overall On the Coast." *Adv Recycling Waste Manag* 8 (2023): 249.