European Proceedings of
Multidisciplinary Sciences
EpMS

www.europeanproceedings.com

e-ISSN: 2421-826X

DOI: 10.15405/epms.2024.09.47

MTMSD 2022
I International Conference «Modern Trends in Governance and Sustainable Development of Socio-economic Systems: from Regional Development to Global Economic Growth»

DIGITAL ENVIRONMENTAL ACTIVISM: THE ESSENCE, SIGNIFICANCE AND TECHNOLOGY

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Abstract

This research aims to explore the landscape of digital environmental activism, focusing on its essence, significance, and the technology employed in contemporary environmental movements. The study employs a mixed-methods approach, combining qualitative analysis of online content, social media trends, and digital platforms with quantitative analysis of engagement metrics and surveys. The research reveals that digital environmental activism has become a powerful force in shaping public awareness and mobilizing collective action. Through content analysis of online platforms and social media, the study identifies key themes, narratives, and strategies employed by digital environmental activists. The research also employs quantitative methods to analyze the reach, engagement, and influence of digital campaigns, shedding light on the effectiveness of various online approaches. One standout result is the significant role of social media platforms in fostering environmental awareness and activism. The study demonstrates that the use of visual content, storytelling, and interactive features on platforms such as Instagram, Twitter, and TikTok amplifies the impact of environmental messages. In conclusion, the findings emphasize the transformative potential of digital environmental activism in shaping attitudes, influencing policy, and fostering a global community dedicated to environmental stewardship. The integration of diverse digital tools and platforms has proven instrumental in amplifying the voices of environmental advocates and mobilizing a broader audience.

Keywords: Civil society, digitalization, digital environmental activism, environmental activism, ecology

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1. Introduction

An integral element of modern civil society is eco-activism, which is gradually beginning to emerge in Russia. Environmental activism is a social movement aimed at strengthening measures to protect the environment from negative anthropogenic impacts (Golbraikh, 2016). The introduction of information technology has made it possible to bring environmental activism to a new digital level, covering a significant part of the population with it (Bekmurzayeva & Kocherbayeva, 2022).

Researchers Ermolaeva et al. (2020) characterize digital environmental activism as a voluntary collective activity based on common environmental interests and values, implemented publicly and disinterestedly through the use of new information and communication technologies (Perevalov et al., 2020). Following the key researchers of digital environmental activism, it is advisable to rely on the classification model of digital political actions developed by the American ecologist and political scientist L.U. Milbrath (Milbrath, 1989). In the hierarchical system of this scientist, three categories of digital actions are distinguished depending on the degree of involvement of the participant (Mentsiev et al., 2020). At the same time, in total, Milbrath singled out 10 types of digital activity, which are clearly shown in Figure 1.

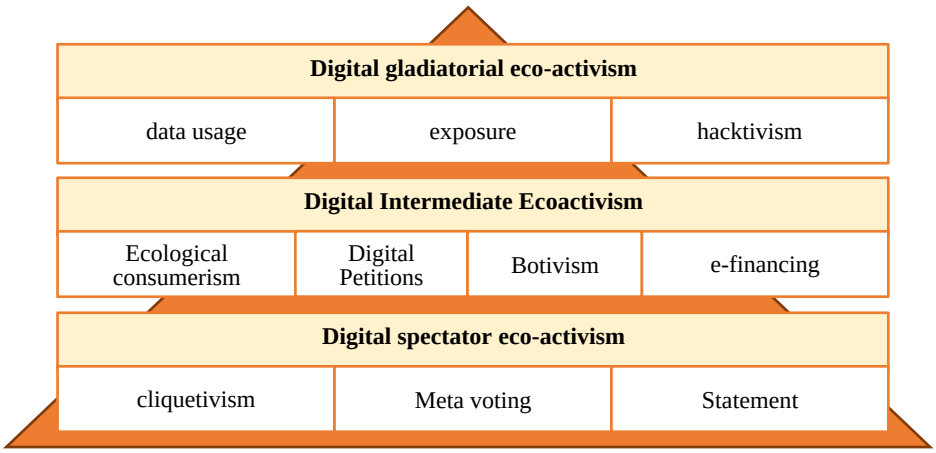

Figure 1. Classification of digital environmental activism

Consider the features of the listed types of digital environmental activism. The simplest and safest way of electronic participation in the ecological life of society is clicktivism (clicktivism - from the English words "click" and "activism"). As the researchers note, clictivism seeks statistical, quantitative support, presence and distribution without an emphasis on real participation (Kaminskaya et al., 2019). Due to the special algorithms of search engines that provide priority issuance of popular queries, clickivism allows environmental problems to have a fairly wide resonance.

Metavoting refers to such an action of Internet users as a repost - a secondary publication or redirection of existing posts. This form of online action promotes the ideas and values of the ecological community, while it directly depends on the popularity of the social network, the number of community members and their personal characteristics. Metavoting also includes commenting, which contains a call to action or a statement of arguments that promotes the main idea in the community's activities. As a

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result of commenting, original content is created containing various kinds of information about the goals, objectives and specific actions of the community.

2. Problem Statement

In the context of increasing environmental challenges, the traditional methods of environmental activism face limitations in reaching and engaging a broad audience. The urgency of addressing global environmental issues necessitates innovative approaches, and digital environmental activism emerges as a potential solution. However, despite its growing prominence, there is a need to understand the specific challenges, implications, and effectiveness of this form of activism.

1. Limited Understanding of Digital Environmental Activism:

i. The landscape of digital environmental activism is evolving rapidly, with a multitude of platforms, strategies, and tools being employed. The lack of a comprehensive understanding of the essence, significance, and technology of digital environmental activism hinders its optimization and strategic deployment.

2. Evaluating the Impact and Effectiveness:

ii. While digital platforms provide a vast reach, assessing the impact and effectiveness of digital environmental activism requires a nuanced analysis. Questions regarding the ability to translate online engagement into tangible real-world outcomes, policy changes, or behavioral shifts remain unanswered.

3. Identifying Key Challenges and Opportunities:

iii. The shift to digital activism introduces new challenges, including issues of misinformation, algorithmic biases, and the potential for online echo chambers. It is crucial to identify these challenges while exploring the opportunities that digital environmental activism presents for mobilizing diverse audiences.

4. Role of Technology in Environmental Advocacy:

iv. The technological aspects of digital environmental activism, including the use of social media, data visualization, and emerging technologies, are not fully understood. Investigating the role and impact of technology in shaping environmental narratives and campaigns is essential for effective advocacy.

5. Ensuring Inclusivity and Equity:

v. Understanding how digital environmental activism includes or excludes different demographics is critical. Ensuring that these digital initiatives are accessible, inclusive, and considerate of diverse perspectives is essential for fostering a truly global movement.

This research seeks to address these gaps by providing a comprehensive exploration of digital environmental activism, its essence, significance, and the technology employed. Through a systematic analysis of the challenges, opportunities, and impact, the study aims to contribute insights that can inform the optimization and ethical deployment of digital tools for environmental advocacy.

In the modern era of economic, political, and social development, Russia needs to adopt new technologies and tools for public administration. One of the prominent tools is digital environmental activism that enables comprehensive control over environmental safety using modern information

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technologies. However, there is a lack of understanding of the concept of digital environmental activism in modern Russian conditions. Therefore, it is essential to explore the essence and varieties of digital environmental activism and its role in ensuring public control over environmental safety.

3. Research Questions

1. How does digital environmental activism contribute to shaping public perceptions and awareness of environmental issues on a global scale?

i. This question seeks to explore the role of digital platforms in disseminating information, educating the public, and influencing attitudes towards environmental concerns.

2. To what extent does online engagement in digital environmental activism translate into tangible environmental outcomes, such as policy changes, conservation efforts, or sustainable practices?

ii. This question aims to assess the effectiveness of digital environmental activism in driving real-world impact and positive environmental change.

3. What are the key challenges faced by digital environmental activism, including issues of misinformation, algorithmic biases, and inclusivity, and how can these challenges be addressed for a more effective and ethical advocacy?

iii. Investigating challenges aims to identify obstacles that digital environmental activists encounter and explore potential strategies for overcoming these hurdles.

Digital environmental activism has emerged as a dynamic force in influencing global conversations about environmental issues. Leveraging the power of digital platforms, activists and organizations disseminate information, raise awareness, and shape public perceptions on a scale not possible with traditional methods. The essence of digital environmental activism lies in its ability to transcend geographical boundaries, creating a global community of environmentally conscious individuals united by shared concerns.

While the impact of digital environmental activism on online engagement is evident, there is a need to understand the extent to which these efforts translate into tangible environmental outcomes. Investigating the connection between online activities and real-world impact, such as policy changes, conservation initiatives, or shifts in individual behavior, is crucial for assessing the effectiveness of this form of advocacy.

However, the landscape of digital environmental activism is not without challenges. Issues of misinformation, algorithmic biases, and inclusivity present significant hurdles that need careful consideration. Addressing these challenges is essential for ensuring the ethical and effective deployment of digital tools in environmental advocacy.

This research aims to delve into these questions, providing a nuanced understanding of the dynamics, impact, and challenges of digital environmental activism. By doing so, it seeks to contribute valuable insights to both scholars and practitioners in the field, fostering a more informed and effective approach to leveraging digital platforms for environmental advocacy.

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4. Purpose of the Study

The purpose of this study is to delve into the realm of digital environmental activism and its pivotal role in fostering public oversight over environmental safety within contemporary Russian contexts. Through a comprehensive examination, the research seeks to offer insights into the diverse manifestations of digital environmental activism and their profound implications for Russia's economic, political, and social landscapes. Moreover, the study endeavors to elucidate the technological facets underpinning digital environmental activism, emphasizing its capacity to empower citizens in shaping environmental policy and decision-making processes. Ultimately, the research aims to underscore the significance of digital environmental activism as a catalyst for advancing environmental sustainability objectives and fostering broader public engagement with environmental issues.

5. Research Methods

In this study, a combination of qualitative and quantitative research methods will be employed to comprehensively explore the concept of digital environmental activism in the Russian context. The primary methods include:

1. Content Analysis:

i. Content analysis will be utilized to systematically examine and interpret the digital content related to environmental activism in Russia. This method will involve the scrutiny of online articles, social media posts, blogs, and other digital sources to identify key themes, narratives, and patterns.

2. Survey and Questionnaire:

ii. A structured survey or questionnaire will be designed and administered to individuals engaged in or affected by digital environmental activism. This method aims to gather quantitative data on public perceptions, attitudes, and the impact of digital environmental activism on environmental awareness and engagement.

3. In-Depth Interviews:

iii. In-depth interviews will be conducted with key stakeholders, including environmental activists, policymakers, and representatives of environmental organizations. These qualitative interviews will provide deeper insights into the motivations, challenges, and strategies associated with digital environmental activism in Russia.

4. Document Analysis:

iv. Document analysis will involve a thorough examination of relevant policy documents, reports, and official statements related to environmental regulations and activism in Russia. This method will help in understanding the institutional framework and legal aspects governing environmental activism.

5. Case Studies:

v. Case studies will be employed to investigate specific instances of successful or impactful digital environmental activism initiatives in Russia. This method will facilitate a detailed examination of the context, strategies, and outcomes of selected cases.

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6. Social Network Analysis:

vi. Social network analysis will be applied to study the network structures and connections within digital environmental activist communities. This method aims to identify influential nodes, information flow patterns, and the overall network dynamics in online environmental activism.

Documents to be Utilized:

1. Online Articles and Publications:

i. Relevant articles and publications from reputable online platforms focusing on digital environmental activism in Russia.

2. Social Media Content:

ii. Digital content from social media platforms, including posts, discussions, and campaigns related to environmental activism in the Russian context.

3. Governmental Reports and Policies:

iii. Official reports and policies from Russian government sources regarding environmental regulations and initiatives.

4. Interview Transcripts:

iv. Transcripts from in-depth interviews with key stakeholders involved in digital environmental activism in Russia.

5. Survey Data:

v. Data collected from the structured survey or questionnaire administered to individuals engaged in or affected by digital environmental activism.

By employing this mixed-methods approach and utilizing a diverse set of documents, the study aims to provide a comprehensive and nuanced understanding of the landscape of digital environmental activism in Russia.

Creating original comments requires more preparation compared to clickivism or metavoting. The effectiveness of such actions depends on the context and skills of the user. In the Russian segment, posts on the blogs of popular eco-activists and on portals such as Greenpeace.ru and Lookbio.ru always receive a large number of comments, which is perceived as a credit of confidence in the proposed environmental initiatives (Stupakov, 2019).

Of particular importance is the statement - the creation of original environmental content in social networks or the media. The content may contain text, illustrations, audio or video recordings that confirm the presence of an environmental problem or contain a call for certain actions aimed at protecting the environment. Thus, original content about events, products and environmentally responsible behavior is created by the portals Greenpeace, WWF, Green Driver, ECA Movement, Ecological Assault, Ecology of Russia and others.

Also, this form of digital activism is widely used in social networks (Kasavina, 2019). So, for example, the Trees of Petersburg group was created with the aim of preserving trees and other green spaces growing in the street environment. The creators of the group consider it their task to register in the RGIS system all the trees of St. new trees at the pace of the 50-60s of the XX century. The popularity of the community is supported by digital environmental activists who support each post with their likes, reposts and comments (Figure 2).

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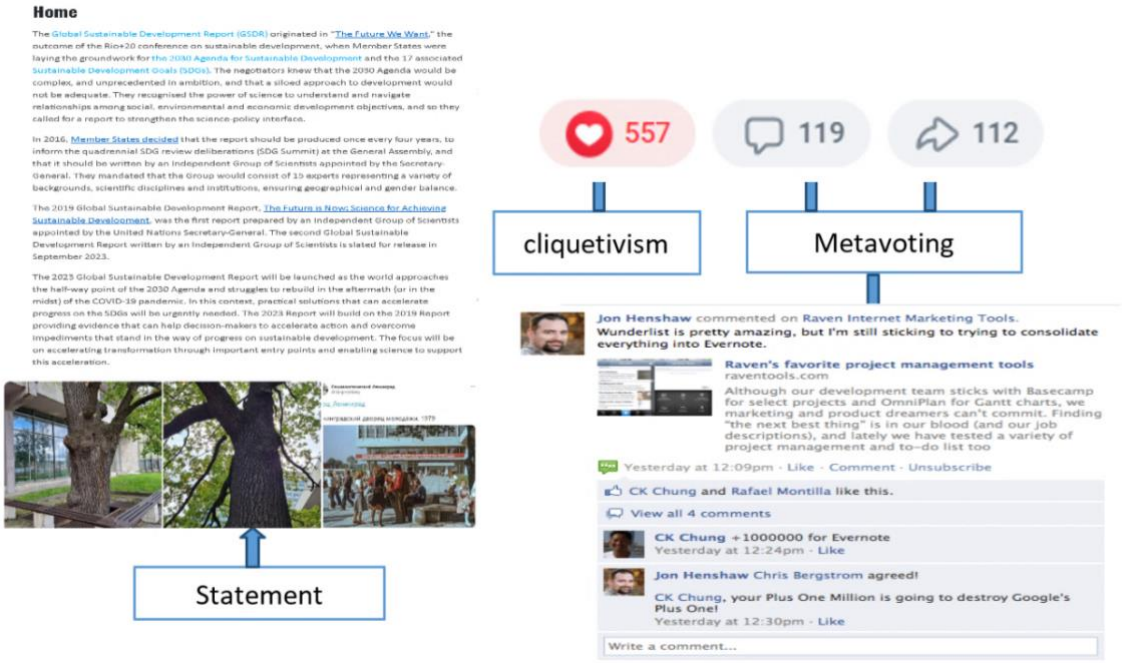

Figure 2. Examples of digital spectator eco-activism

The next step in the development of digital environmental activism is intermediate (transit) actions that require more resources than observational ecoactivism, but at the same time have a stronger impact on society (Fomichev, 2019; Nazarov et al., 2021).

Thus, ecological consumerism is associated with the purchase and promotion of environmentally friendly products and ways of consuming them on the Internet. Thus, the zero waste project, whose participants seek to purchase goods without packaging, is gaining popularity. Real environmental actions are accompanied by digital ones - discussion, understanding and development of new zero waste technologies in social networks (Figure 3).

Figure 3. The principle of zero waste as a manifestation of ecological consumerism

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Digital petitions are a form of activity that provides for a mandatory response from the authorities. Digital petitions first appeared in the United States, where a response from the government must be received if a particular petition gains 100,000 signatures in 30 days. In the UK, there is a three-step digital petition form: a citizen creates a petition, which must be signed by five more people in order for it to be published on the profile portal (Popov et al., 2022). The petition needs 10,000 signatures to get a response from the government. In the event that the petition is signed by 100,000 users, it has a chance to be considered by Parliament. At the same time, members of the British Parliament have the opportunity to choose any petition, even with a small number of votes, and discuss it at a meeting or provide an answer to the initiator of the petition (Ermolaeva et al., 2020).

Usually, the creation of a petition is available only to those who have the citizenship of the country. The initiator creates a petition, after which he uploads it to a special portal and tries to collect a sufficient number of signatures to receive an answer from the authorities or to submit the issue for discussion by the parliament.

There are several portals for posting petitions in the Russian Federation, the most popular of which are Change.org, Avaaz.org and Democrat. The activities of these portals cause significant public outcry and allow solving a large number of issues in the field of ecology. In recent years, with the help of digital petitions, it has been possible to defend the Kholodnenskoye deposit on the shores of Lake Baikal, prevent the placement of a landfill in Balashikha near Moscow, preserve Siberian forests, and save several species of animals listed in the Red Book from destruction. At the same time, at present, only petitions posted on the Russian Public Initiative (ROI) portal and having collected the required number of signatures are necessarily submitted for consideration by the working group under the Government of the Russian Federation (Figure 4).

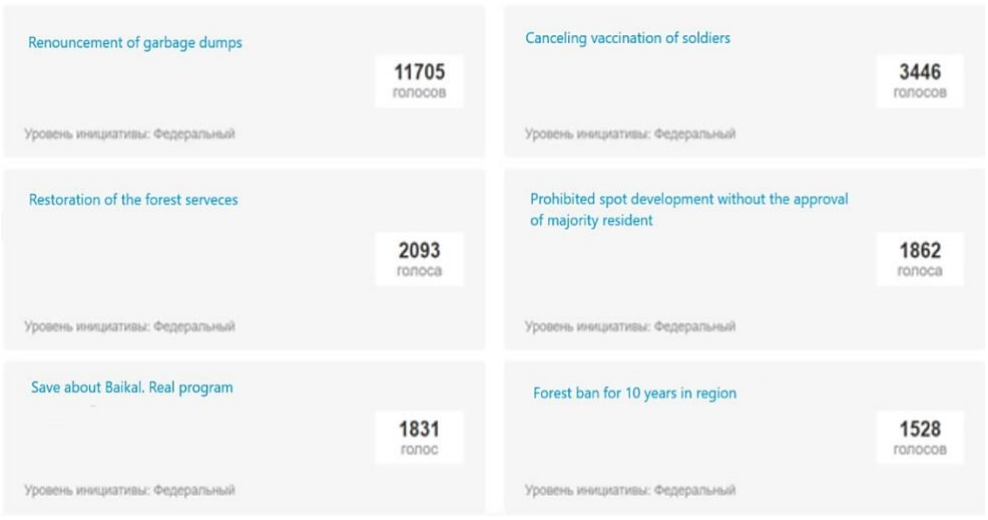

Figure 4. Environmental initiatives put to the vote in the project "Russian Public Initiative"

The term botivism denotes activity associated with the use of "bots" - special programs or artificial intelligence. With the help of botivism, you can respond to online trolling on social networks, as well as use bots (non-existent users) to increase community activity and calls for certain actions. Botivism helps

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communicate information to community members, solicit funds for projects, and increase social media outreach.

6. Findings

The research reveals a notable trend in the utilization of digital applications to address environmental challenges. Notably, applications like Ecology in Questions and Answers are playing a pivotal role in processing incoming environmental queries and providing practical solutions to everyday environmental issues. The Spectrum app contributes to citizen engagement by logging municipal issues in real time, enhancing the efficiency of issue resolution. Additionally, the Open Recycle Bot application demonstrates the potential of digital technologies in optimizing resource usage. It allows users to upload parameters related to electrical network loads and offers the most economical scheme for resource utilization, including the calculation of optimal household appliance operation modes to reduce electricity consumption (Kuznetsov et al., 2018).

The research also highlights the significant role of digital funding mechanisms in supporting environmental projects. Various forms of digital fundraising, such as user donations, fundraising auctions, and even cryptocurrency mining, are actively employed. Almost every environmental portal surveyed incorporates tools for providing financial support, indicating a widespread and diverse range of digital funding methods within the environmental sector.

These findings underscore the transformative impact of digital applications and funding mechanisms on environmental initiatives. The integration of technology not only facilitates practical solutions to environmental issues through applications but also ensures the financial sustainability of environmental projects through innovative funding strategies. This global result suggests a promising shift towards leveraging digital tools for both problem-solving and resource mobilization in the realm of environmental activism and sustainability.

Several digital applications are working to solve environmental problems. The Ecology in Questions and Answers application processes incoming requests and generates answers that will help solve everyday environmental problems. The Spectrum app takes inquiries related to municipal issues and logs them in real time. In the Open Recycle Bot application, you can upload the parameters of the load on the electrical networks and get the most economical scheme for using resources (Kuznetsov et al., 2018). The application also allows you to calculate the optimal mode of operation of household appliances, which will reduce electricity consumption.

Digital funding is used to support environmental projects, including forms such as user donations, fundraising auctions, cryptocurrency mining, etc. Almost every environmental portal has a tool for providing financial support (Figure 5).

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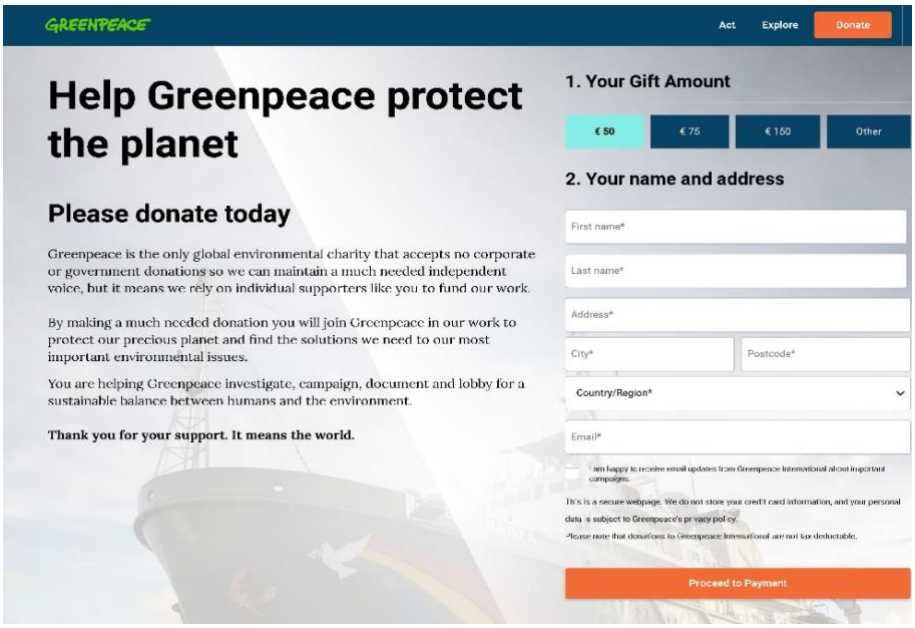

Figure 5. Form for financial support on the Greenpeace website

E-finance does not apply to direct action, as the collected funds become a tool for subsequent actions in the field of ecology (Belyaeva, 2021).

The highest forms of digital eco-activism are digital "gladiator" actions: work with databases, exposures, hacktivism. Digital environmental activity based on the use of data (data activism) appears in three main forms (Mentsiev & Gatina, 2021):

i. the movement to get open access to everything, including government data on environmental issues;

ii. activities to ensure the free exchange of environmental data between scientists, analysts and interested citizens;

iii. collaborative data processing activities involving non-profit organizations and volunteers.

The right to receive environmental information is approved in the provisions of the Constitution of the Russian Federation, but in fact, both large environmental organizations (for example, Greenpeace) and autonomous environmental activists are forced to fight for the right to public access to it (Knight, 2014; Shadrina & Egorova, 2021).

Another branch of data activism focuses on the organization of data exchange and the creation of various online databases of environmental information. An example of such a project is the Litterbase portal and interactive map, which has accumulated all the information about the pollution of the world's oceans (Figure 6).

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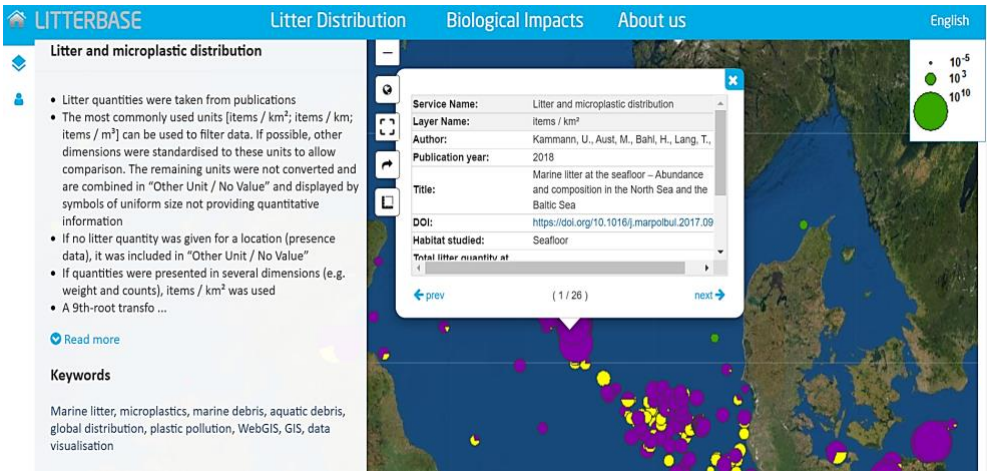

Figure 6. Litterbase Interactive Map of World Ocean Pollution as an example of data-activism in the environmental sphere

An example of data-activism based on collaborative data processing is the Penguin Watch project, in which volunteers processed a multi-million array of photographs obtained as part of automatic monitoring of Antarctic penguins. While viewing the frames, the participants manually marked adult penguins, chicks and eggs on them, which made it possible not only to assess the dynamics of the penguin population in regions inaccessible to research, but also to develop a neural network training method for automatically recognizing birds in photographs.

7. Conclusion

The integration of blockchain technology is presenting innovative avenues for effective environmental preservation. Demonstrating this, the Australian startup Power Ledger has pioneered a platform facilitating energy exchange, environmentally friendly goods trade, and investments in renewable energy sources. WePower, another blockchain platform, stands out as the first to exclusively facilitate the buying and selling of renewable energy. This approach empowers renewable energy producers to issue crypto assets, attracting investments and fostering favorable deals between producers and buyers. The development of an Ethereum Smart Energy smart contract by WePower further streamlines transactions through WPR tokens.

Digital environmental activism manifests in various forms, including exposure of major environmental offenses committed by governmental and commercial entities. In Russia, this form of activism is popular but encounters limited support and, at times, opposition from law enforcement agencies. The study also notes the underdeveloped nature of hacktivism in the Russian environmental sphere, highlighting the illegal use of digital technologies to advocate for political and environmental causes, freedom of speech, human rights, and information freedom (Ilaeva et al., 2020).

In summary, digital environmental activism in Russia encompasses a broad spectrum of network activities and technologies. From social media engagement to sophisticated investigations and DDoS attacks on anti-environmental resources, the diversity of methods employed reflects the multifaceted nature of this activism. The comprehensive development and support of digital eco-activism emerge as crucial components of civil society development in Russia. The study underscores the potential for digital

technologies to reshape environmental activism and foster positive change in the environmental landscape.

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