HYDROPOLITICS: THE REGIONAL CONTEXT

ГИДРОПОЛИТИКА: РЕГИОНАЛЬНЫЙ КОНТЕКСТ

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Alternative for Tuvalu's Statehood: Sunk to the Bottom or Move to the Metaverse?

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Abstract. Global warming caused by climate change has disparate effects on different parts of the international community. Based on the case-study of Tuvalu, an Oceanian microstate, faced the possibility of complete flooding; therefore, it implemented plans for both the physical migration of the population to nearby countries and the digital transfer of statehood to the metaverse. The hypothesis of the study states that the experience of constructing the first digital state in history provides a model of state's transformation for countries experiencing similar issues as well as for providing a platform for the implementation of future humanitarian projects with the cooperation of the international community. These projects concern the digitalization of public and political life, the formation of digital counterparts for states, and the transition to newly emerging metaverses. The key conclusions are that the digitalization means doubling of phenomena in the social sciences: along with physical space, a transfer to the digital one is assumed, however the case of Tuvalu can indicate in the future that the state, society, and culture will exist purely digitally.

Keywords: Tuvalu, digital state, metaverse, digital twin of the state, domain name, digital resource, statehood with no territory, landless state

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Альтернатива для государственности Тувалу: отправиться на дно или в метавселенную?

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Аннотация. Глобальное потепление вследствие климатических изменений производит неравные эффекты для различных государств международного сообщества. На основе кейс-стади опыта микрогосударства Тувалу в Океании, которое оказалось перед угрозой полного затопления, показано, как, совмещая меры по физической миграции населения в соседние страны и цифровой миграции государственности в метавселенную, решается вопрос о будущности государственности в новых условиях. Гипотеза исследования состоит в том, что опыт создания первого в истории цифрового государства представляет собой как модельный образец для стран, столкнувшихся с подобными вызовами, так и в качестве примера становления при поддержке международного сообщества платформы для реализации будущих инициатив человечества, связанных с цифровизацией общественной и политической жизни, создания цифровых двойников государств, а также переходом в метавселенные, которые сейчас находятся лишь на стадии формирования. Ключевые выводы заключаются в том, что в социальных науках цифровизация подразумевает ситуацию удвоения: наряду с физическим пространством предполагается переход в цифровое, однако кейс государства Тувалу может продемонстрировать в перспективе исключительно цифровое существование государства, социума и его культуры.

Ключевые слова: Тувалу, цифровое государство, метавселенная, цифровой двойник государства, доменное имя, цифровой ресурс, государственность без территории

Introduction

In the context of global climate change, many island nations are facing serious threats to their existence. One such nation is Tuvalu, a small country located in the South Pacific Ocean. Tuvalu consists of nine coral atolls, most of which are only a few meters above sea level. Due to rising sea levels caused by melting glaciers and expanding water as it warms, Tuvalu is at risk of disappearing completely. The country is called "sinking" [Mortreux, Barnett 2009] in the truest sense of the word.

As I. Okunev [2014] notes, "the modern political landscape of Oceania in many ways looks like a world in miniature. In Oceania, almost all the main trends and features of the modern world are reproduced on a smaller scale. Here we encounter an amazing diversity of types of political structure, and numerous conflicts of various kinds, and integration processes, and challenges to sustainable development that are traditional for the entire world".

However, unlike other countries that may be forced to relocate their populations or adapt to new living conditions, the government of Tuvalu is considering a unique approach—the creation of a digital state. Moreover, in 2023, this strategy was enshrined in the Constitution of Tuvalu: "The state of Tuvalu will always exist, despite the effects of climate change and other [circumstances] that lead to the loss of its territory".[1] This notion entails preserving a country's national identity and cultural history, as well as its statehood, institutions, and sovereignty, even if its territory may disappear physically. In this article, we look at the possibility of establishing a digital state as an alternate means to protect the nation.

Rising sea levels are one of the most pressing environmental issues of our time. According to the most recent Intergovernmental Panel on Climate Change (IPCC) estimates, sea levels might increase by 0.3-1 meter by the end of the 21st century. A large portion of low-lying islands (5 m above sea level), such as Tuvalu, will unavoidably be flooded.

2024 turned out to be not only the hottest year on record but also, for the first time, exceeded the 1.5°C warming threshold, which almost all countries of the world agreed to maintain in Paris in 2015. The Copernicus Climate Change Service (C3S) announced the results of climate observations in 2024. According to the findings of this authoritative center, 2024 was the warmest year in the entire history of global temperature observations, starting in 1850. In 2024, the average global temperature was 15.10°C, which is 0.12°C higher than the previous highest annual value in 2023. The last ten years have been the warmest on record.[2] Studies show that some areas of Tuvalu are already suffering from flooding during high tides and storms. This leads to the destruction of infrastructure, contamination of fresh water sources, and deterioration of living conditions for the population. If current trends continue, most of Tuvalu's landmass will be underwater by the mid-21st century.

Literature Review

The fate of Tuvalu is rarely discussed in political science literature. However, the most recent works of Russian and foreign authors address broader theoretical issues concerning Tuvalu's possibilities for retaining its statehood. A. Hegde [2023] handles complex issues such as socio-technological transformations, digitalization, and the

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[1] *Tuvalu Has Stated That The State Will Continue To Exist Even If It Loses Its Territory.* Retrieved January 10, 2025, from https://tass.ru/obschestvo/18775269?ysclid=m6f649gvh3323858304

[2] The 2024 Annual Climate Summary: Global Climate Highlights 2024. *UNDDR.* Retrieved January 10, 2025, from https://climate.copernicus.eu/global-climate-highlights-2024

impact of climate change. The problems of Tuvalu's digital sovereignty are the focus of research by D. Rothe [2024], V. Dickstein [2023]. N. Naqvi [2023], O.Yu. Angel [2023], S. Riezqia [2024], A.M. Vafin [2022], H. Prodanov [2023], and M. Dugaev et al. [2023] discuss the issues surrounding the metaverse as an alternative integrated digital arena for sociopolitical engagement. The topic of digital twins is covered in the work of M. Böhlen [2024], and there are separate works devoted to digital twins of states (J. Sottet and C. Pruski [2023]) and their bureaucracy (S. Eom [2022]), regions (V.I. Abramov and V.D. Andreev [2023]), cities (M. Haraguchi and his colleagues [Haraguchi, Funahashi, Biljecki 2024], as well as the work of V.I. Abramov and A.A. Gromyko [2021]). Both the phenomena and, more importantly, the conceptions that define them are still in the early phases of development. Due to the novelty of the topic, the task is to discuss the following issues: the possibility of a state without territory; potential sources of financing the existence of digital states; the metaverse as a space for the existence of digital states; the tendency of the emergence of digital twins of states; and Tuvalu's path to the metaverse.

The Great Flood and the Exodus for the Nation State

Tuvalu is facing an existential threat, and it will undoubtedly be a turning point in the history of the country and its people. The complete disappearance of the territory as a result of flooding leaves only one way to save the lives of the population of Tuvalu—a migration exodus. As a strategy for responding to the problems associated with climate change, the government of Tuvalu has been encouraging migration for quite some time now [Shen, Binns 2012]. Migration from Tuvalu occurs mainly to New Zealand. Common historical and cultural ties facilitate the adaptation of the inhabitants of Tuvalu in this country [Shen, Gemenne 2011]. Since the 1970s, New Zealand has created a special instrument of international solidarity for people in Oceania countries facing similar threats, promoting the Pacific Access Category Resident Visa (PACRV), which allows residents of the island nations threatened by submergence—Kiribati, Tuvalu, Tonga, and Fiji—to vote and apply for permanent residence. By the end of 2021, half of Tuvalu's population had already emigrated to New Zealand.[3]

In New Zealand, the total number of Pacific peoples, including Tuvaluans, has increased from around 2,000 in 1986 to more than 11,000 in 2018. Most live in the

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[3] *Half of the Population of a Sinking State Has Left Due To Global Warming.* Retrieved January 10, 2025, from https://news.ru/world/ministr-tonushego-gosudarstva-obyasnil-posledstviya-globalnogo-potepl eniya/?ysclid=m6f6hbpl6m834058538

north of the country, primarily in Auckland, the largest city with a population of 1.5 million. Auckland is currently home to the largest Polynesian community in the world, making the city the unofficial capital of Polynesia. Along with other people from island microstates, the former Tuvaluans formed separate communities that lived compactly and preserved cultural traditions and their native language.[4]

The case of this small country demonstrates, first and foremost, that the countries with the least responsibility for climate change suffer the most from it. Second, the actual threats to the state and society posed by climate change are truly dramatic for small nations. The only way out for them is migration and, in the long run, disintegration in the host societies. However, new opportunities are emerging for them as a result of digitalization, such as a metaverse, the creation of digital twins, and the use of digital resources as a primary source of national wealth.

Statehood without Territory: the Possibility of Existence

The state is traditionally described as a political body with authority over a specific region and population. Territory, along with population, power, and law, is seen as one of the state's defining characteristics. However, in the modern world, there may be times when traditional notions of the state are challenged. There have been state formations in history that had no territorial connection, such as the Order of Malta. Today, there are states that are recognized but do not have their own territory, waging a political and military struggle for it (Palestine, Western Sahara). There are self-proclaimed virtual states of a marginal nature, such as the Principality of Sealand (a constitutional monarchy with all the attributes of statehood, created on an abandoned oil platform in the North Sea), Molossia, Aerica, Liberland, and a number of others.

Tuvalu, on the other hand, cannot be included in this list because it has historically been an internationally recognized state, as well as a member of the United Nations and several other international organizations. It is a former British colony that obtained independence in 1978, with a parliamentary monarchy and membership in the Commonwealth of Nations. The British monarch serves as Tuvalu's head of state, while a unicameral parliament exercises legislative power. The Governor-General, who represents the head of state, as well as the Prime Minister and their Cabinet, exercises executive power. Tuvalu and the Russian Federation have had diplomatic relations since 2011, when Tuvalu recognized Abkhazia and South Ossetia as independent states.

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[4] *Story: South Pacific Peoples. Page 2. Island Groups And Recent Migration.* Retrieved January 10, 2025, from https://teara.govt.nz/en/south-pacific-peoples/page-2

Given that sovereignty has traditionally been associated with control over a specific territory, and international law is based on the recognition of territorial boundaries and sovereignty, establishing a digital state without regard for territory will necessitate significant changes in international law and practice. Furthermore, implementing the state's shift to a digital state requires the desire to preserve the said state, national identity, elite motivation, and material resources.

The Domain Name as the Primary Source of National Wealth

Tuvalu is forced to be at the vanguard of societal transformations for the entire world as a result of the climate crisis. Tuvalu has both a reason and a resource for retaining sovereignty without territory, and it is in the digital world. The .tv domain is the country's code top-level domain (ccTLD). It was delegated to Tuvalu in 1996. Initially, it was used only for the country's internal needs, but it soon became apparent that its letter combination was ideal for companies involved in television content and video hosting. As a result, foreign companies and individuals began to take an active interest in the domain. In 1998, the Tuvalu government entered into an agreement with the American company Idealab, which received exclusive rights to sell and register .tv domains. This made it possible to monetize the popularity of the domain name, and the income from registering .tv domains became an important source of income for Tuvalu.

A small country with limited economic potential, it found a means to increase its budget by selling the rights to use its domain name. Revenue from domain sales accounts for approximately one-tenth of the country's GDP. This revenue has allowed the Tuvaluan government to invest in infrastructure, health care, and education. Today, the .tv domain plays an important role in the Tuvaluan economy, demonstrating how creative use of national resources can benefit even the smallest countries.

The Escape to the Digital Dimension and the Problems of the Metaverse

The concept of a metaverse arose from the challenge of converting the state and society to a digital hypostasis. The metaverse is a concept that refers to an integrated virtual space that merges several platforms, services, and devices into a single ecosystem. It is a network of interconnected virtual worlds in which individuals can communicate, work, learn, relax, and live a digital life alongside their physical ones.

The metaverse contains a feature known as *immersion*, which allows users to immerse themselves in virtual or augmented reality. These technologies help to generate a sense of presence in the virtual world. The virtual environment exists *continuously*, regardless of user involvement. Events take place in real time, and users can connect at any given moment. *Interoperability* implies that different platforms and services in the metaverse should work together. Users can transfer their avatars, assets, and achievements between different virtual spaces. *Social interactions* play a significant role in the metaverse. Users can communicate, collaborate, form communities, and take part in cooperative activities. The metaverse has its own *economic systems* based on cryptocurrencies, non-fungible tokens (NFTs), and other digital assets. Users can make money by buying and selling items and services. All of these traits enable the metaverse to function as a nearly complete social environment as well as a public policy arena.

Metaverse implementation can be found in various projects such as Decentraland, Sandbox, Roblox, and Fortnite. These platforms offer users a variety of opportunities for creativity, gaming, and social interaction. The metaverse attracts the attention of both developers and investors, as it opens up new horizons for business, education, entertainment, and social life, and in the future—political life. Virtual political events, such as rallies, are already being held today. And remote electronic voting (REV) has transferred the electoral process to the digital space. Today, we are faced with only a few individual manifestations of the digitalization and virtualization of political processes. Over time, these social and political practices will only expand.

The connection between the metaverse and politics is becoming an increasingly relevant topic as virtual worlds develop and become integrated into everyday life. The metaverse, as a single space that unites various platforms and services, provides unique opportunities for political participation, propaganda, monitoring public opinion, and even holding elections. Thus, the metaverse can become a powerful tool for political mobilization and agitation. Politicians and parties increasingly use virtual spaces to hold rallies, meet with voters, and disseminate their ideas. Such events can attract more participants due to their accessibility and convenience, especially for those who cannot be present physically. Even Russia has a record of holding such a virtual political event.[5] Furthermore, the metaverse enables the creation of interactive campaigns that engage users in the process of discussion and decision-making. Moreover, the practice of establishing and maintaining virtual (cyber) political parties has evolved in a number

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[5] *Here, the LDPR held the first digital May Day demonstration in the computer game Minecraft.* Retrieved January 10, 2025, from https://ldpr.ru/event/282129

of Western countries. As a new phenomenon, they are gaining traction at the local and national levels, as well as in the European Parliament. Such parties have been referred to as virtual parties, cyberparties, "coach parties", and "flash parties".[6]

The metaverse provides numerous opportunities for gathering and analyzing data on user activity and preferences. Policymakers and analysts can utilize this data to better understand public sentiment, identify trending topics, and tailor their policies accordingly.

The metaverse is altering the dynamics of international relations by creating new platforms for diplomacy and collaboration. Virtual meetings and conferences will enable leaders to connect immediately, circumventing physical barriers and restrictions. On the other side, the metaverse has the potential to be used for cyber diplomacy and cyber warfare.

Thus, the metaverse has an enormous capacity to revolutionize politics. It can make political involvement more accessible and convenient, but it also brings new risks, such as the spread of misinformation and violations of privacy. Today, we see only the first sporadic entries of the political sphere into the metaverse, but the amount and scale of social and political communications will only grow in the future. The metaverse will soon become the space of existence for the digital state.

State's Digital Twin

The concept of a "digital twin", like many other concepts in modern humanitarian knowledge, has its roots in economic science and a digital understanding of the economy and society. As V.A. Abramov and A.A. Gromyko write, the meaning of this phenomenon is that "a digital twin can link a physical system with its virtual equivalent to implement intelligent control in real time through a holistic perspective" [Abramov, Gromyko 2021]. The concept of a digital twin appeared in the early 2000s in relation to the concept of a product life cycle, and then gradually began to cover more and more objects that became increasingly large-scale.

A digital twin of a state is a concept related to the creation of an exact copy of the real infrastructure, processes and systems of a state in a virtual environment. The main goal of this approach is to model and analyze the behavior of real objects and systems, predict possible scenarios for the development of events and make informed decisions based on this data.

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[6] *Virtual (Cyber) Political Parties.* Retrieved January 10, 2025, from https://psyera.ru/virtualnye-kiber-politicheskie-partii_13298.htm?ysclid=m8ptzcm1ss797992204

Models of infrastructure—roads, buildings, power networks, water resources, and other physical objects—may be among the primary components of a state's digital twin. Modeling economic, social, and political systems helps us understand how certain changes will impact society. To accomplish this, vast volumes of data are gathered and processed from a variety of sources, including sensors, surveillance cameras, social networks, and government databases. This data is used to develop models and forecast future events using artificial intelligence.

Digital twins of states are an effective tool for better management and planning. This method takes a projective view on the management of a genuine, physically existing system. This may not be the only positive aspect of digital twin-based political management. Thus, in the chapter on network warfare in the book "Russian War", A. Dugin [2023] discusses the need to construct a digital twin of Russia in order to ensure successful participation in a hybrid war.

Individual elements of this model are already being actively implemented in large cities with their "Smart City" system. On a national scale, China is a pioneer in this area, where the implementation of such large-scale digital projects in the name of security and quality of governance does not meet with resistance from civil society. The use of smart technologies today is most often carried out to solve such problems as ensuring urban security, combating natural disasters, and developing monitoring systems (Japan and South Korea), preventing and monitoring public order through a single integrated video surveillance network (China), and creating a "smart" nation and digital government (Singapore).[7] It is apparent that Southeast Asian countries are undertaking these initiatives on the largest scale. All of this, however, implies that the digital state provides additional service functionality. In the instance of Tuvalu, we are discussing a total transition to a digital format, with no analog counterpart.

The creation of "smart" and "digital" cities and states is accelerating worldwide. This digitalization is transforming both the socio-economic and socio-political landscape, regardless of cultural and civilizational differences or the nature of the political regime. Consequently, this trend evokes strong reactions. Techno-optimists are enthusiastic about the potential benefits. However, technoskeptics are concerned about the consequences of total transparency; they see the potential for a "digital GULAG", a realization of a dystopian scenario. We hear more

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[7] *How Smart Cities Work in Russia and Around the World.* Retrieved January 10, 2025, from https://trends.rbc.ru/trends/industry/616e613c9a79473e73ff9138?from=copy

and more about humanity's unpreparedness for the rapid introduction of digital technology and the need for artificial restraints on such expansion (for more detail see [Vinogradov, Kazarinova 2022].

The Path Tuvalu Chooses

Traditional climate change adaptation measures, such as erecting protective structures, enhancing the resilience of buildings and infrastructure, and transferring the population, will not work in Tuvalu since the entire archipelago could be submerged in the long term. As a result, the Tuvalu government is considering more radical approaches, such as shifting all government services and cultural values to virtual space. In this instance, Tuvaluans will be able to retain their national identity and interact with one another despite the loss of physical territory.

The creation of a digital state that preserves Tuvalu's sovereignty will necessitate the development and implementation of modern technologies to ensure *communication between citizens and government bodies*, such as blockchain technology for data storage, cloud services for document management, and virtual platforms for meetings and conferences, as well as long-term connection to the metaverse. This will entail the *digitalization and preservation of all key cultural objects*, such as music, literature, art, and traditions. These will be accessible to all citizens via the Internet, allowing them to stay connected to their culture regardless of location.

The digital state requires the creation of new legal norms that govern societal activities under novel circumstances, such as citizenship, taxation, property rights, and other aspects of the state's operation in virtual space.

Perhaps the most difficult area to implement may be the reorientation of the economy towards digital services and products. With a very small population (around 10,000 people) engaged in traditional activities—agriculture and fishing—it is unlikely that Tuvalu will become a hub for software development, online education, or the creation of digital currencies without the help of the international community.
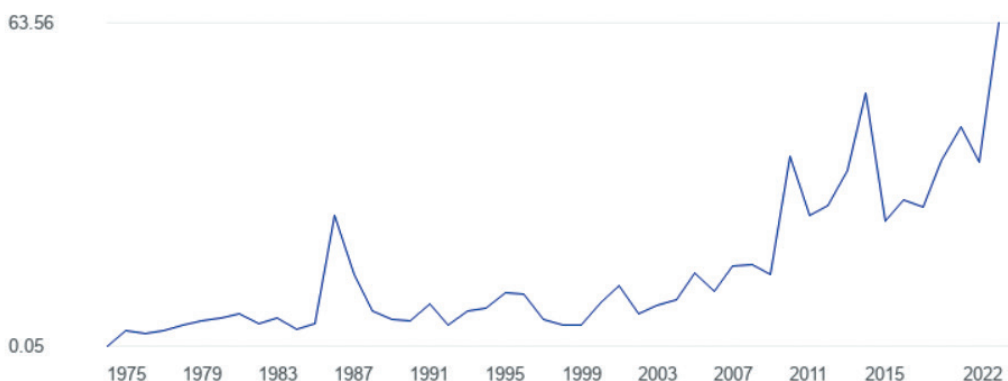
International Aid to Tuvalu

It should be noted that the international community is aware of its responsibility for climate change, which has put Tuvalu at risk of flooding [Abedinpour 2010]. Repeated speeches by government representatives at global climate summits have helped to draw the world's attention to this country.

Tuvalu receives international aid and development assistance from donor countries and organizations. This aid is directed towards projects in areas such as infrastructure, health and education.[8] The European Union provides Tuvalu with significant aid and technical support.[9] Japan is an important donor of aid in the form of grants and technical cooperation. In 1987, New Zealand, Australia and the United Kingdom established the Tuvalu International Fund, which aims to help Tuvalu achieve financial autonomy.

Taiwan is a major source of international aid.[10] Taiwan has had diplomatic relations with Funafuti (the capital and largest city of Tuvalu) since independence and has been a source of vital aid, investment and trade for many years, providing the island nation with approximately 12 million US dollars in aid each year. For Tuvalu, the most aid-dependent country in the world, this support has been instrumental in stimulating development and sustaining economic growth.

In 2022, Tuvalu received foreign aid of 63.56 million US dollars, an increase from 36.01 million US dollars in 2021 (Figure 1).[11]

Figure 1. Dynamics of the volume of international aid to the State of Tuvalu in 1975–2022, million US dollars
Source: Tuvalu: Foreign aid. Retrieved January 10, 2025, from: https://www.theglobaleconomy.com/Tuvalu/foreign_aid/.

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[8] *Economic sectors of Tuvalu.* Retrieved January 10, 2025, from iamaccepted.com/economic-sectors-of-tuvalu/

[9] The European Commission's Delegation for the Pacific — Achievements For Tuvalu. Retrieved January 10, 2025, from https://web.archive.org/web/20111008065407/http://www.delfji.ec.europa.eu/en/achievements/tuvalu.htm

[10] Taiwan, Tuvalu, and Uncertainty in the Pacific. *Global Taiwan Institute. Global Taiwan Brief.* 2024, *9*(3). Retrieved January 10, 2025, from https://globaltaiwan.org/2024/02/taiwan-tuvalu-and-uncertainty-in-the-pacific/

[11] Tuvalu: Foreign Aid. Retrieved January 10, 2025, from https://www.theglobaleconomy.com/Tuvalu/foreign_aid/

International Aid Transparency Initiative (IATI) shows that there are currently 152 international aid initiatives in Tuvalu. The top donor organizations are as follows: New Zealand's Ministry of Foreign Affairs and Trade, Australia Aid, Asian Development Bank, World Bank, Global Environment Facility, WHO (World Health Organization), European Commission, Global Green Growth Institute Institute (Figure 2).[12]
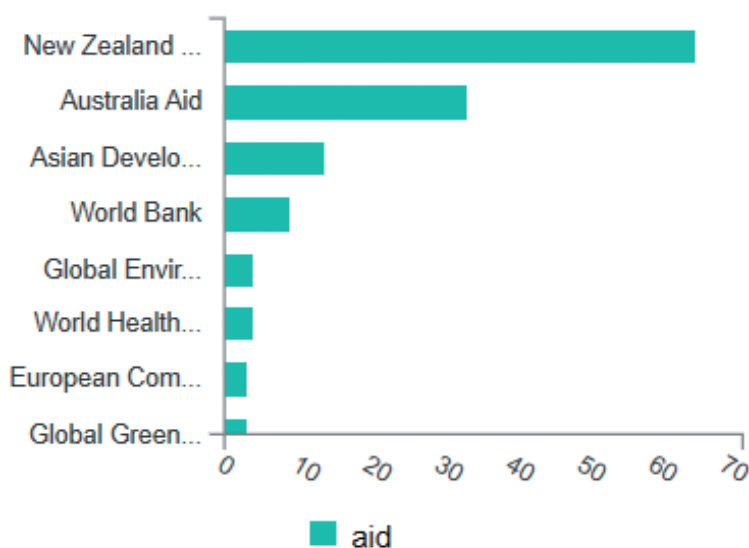
Figure 2. Initiatives of international assistance to Tuvalu from government and international charitable organizations, January 2025, number of initiatives

Source: Current IATI aid activities in Tuvalu. Retrieved January 10, 2025, from: https://data.humdata.org/dataset/iati-tuv?force_layout=desktop

Such large-scale international assistance to the micro-state of Tuvalu as a result of increased awareness of global responsibility for climate change allows us to hope for the implementation of plans for the preservation of statehood in digital format, which were not only formulated but also included in the state's Basic Law.

Conclusion

Tuvalu's submersion as a result of climate change and rising sea levels is a serious issue that demands unprecedented action to maintain sovereignty in the face of total territorial loss. The country's leadership is taking extraordinary steps, officially enshrining the prospect of building the world's first digital state—a digital twin that

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[12] *Current IATI Aid Activities in Tuvalu Current IATI aid activities in Tuvalu — Humanitarian Data Exchange.* Retrieved January 10, 2025, from https://data.humdata.org/dataset/iati-tuv?force_layout=desktop

does not have a physical counterpart. Although this road is fraught with obstacles, it opens up new possibilities for preserving national sovereignty and cultural identity. Tuvalu can serve as an example not only for other small island states dealing with similar issues, but also as a platform for the implementation of projects for humanity's future, such as the digitalization of sociopolitical life and a partial or complete transition to the metaverse, which are only now taking shape.

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