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Models of integrating social and transport infrastructure in housing construction in remote regions: the experience of the republic of Tyva

This paper provides an in-depth analysis of the integration of social and transport infrastructure in housing construction, using the Republic of Tyva as a case study. The region's unique geographical and socioeconomic conditions necessitate a thorough evaluation of modern infrastructure planning and implementation strategies for Russia's remote territories. This study examines contemporary challenges and barriers associated with improving access to social services, ensuring high-quality service provision, establishing transport connectivity, and fostering sustainable regional development. Special attention is given to innovative models and methodologies that facilitate the efficient operation of various infrastructure types under current conditions. The paper analyzes successful projects and initiatives implemented in Tyva, assessing their impact on living standards and the development of residential construction. Key factors contributing to effective infrastructure integration are explored, including financial mechanisms, private investment participation, and partnerships with local governments. Particular emphasis is placed on environmental sustainability and the responsible management of natural resources throughout the development of both transport and social infrastructure. Additionally, the study examines methods for optimizing logistics processes and strategically planning the location of social infrastructure facilities to enhance accessibility for diverse population groups.

A comprehensive set of recommendations is provided to improve infrastructure integration and planning processes, ensuring more efficient resource utilization and advancing key social and economic indicators at the regional level. The findings of this research are valuable for professionals in urban and regional planning, infrastructure project management in remote areas, and government authorities responsible for territorial development strategies.

Keywords: infrastructure integration, residential development in the Republic of Tyva, social and transport infrastructure, regional development in remote areas, and architectural planning

The housing construction industry in remote regions of Russia, such as the Republic of Tyva, faces distinct challenges due to its unique geographical features, extreme climatic conditions, and specific economic and social factors. The effective development of such territories requires a comprehensive approach that integrates social and transport infrastructure systems to ensure comfortable living conditions for the population while improving their overall quality of life. Modern infrastructure integration models play a crucial role in facilitating sustainable territorial development, enhancing transport accessibility, and providing essential social services to residents.

The Republic of Tyva, as a regional center in Asia, experiences significant transport constraints alongside underdeveloped social infrastructure. These factors have a substantial impact on the pace of housing construction and the overall standard of living within the region. This paper examines contemporary approaches to infrastructure integration, focusing on housing development in the Republic of Tyva. The study evaluates existing models, assessing their effectiveness and proposing optimization strategies for infrastructure projects to achieve sustainable development under regional conditions.

THEORETICAL CONCEPTS OF INFRASTRUCTURE INTEGRATION

The integration of social and transport infrastructure comprises a set of complex and multidimensional measures aimed at creating favorable

conditions for both population needs and regional development. Various infrastructure integration approaches are highlighted in academic literature, including functional, spatial, and institutional integration. Functional integration involves the coordinated operation of different infrastructure systems to deliver comprehensive services to the population. Spatial integration is based on the strategic planning of infrastructure facility distribution to maximize accessibility and usability for residents. Institutional integration entails collaboration between government agencies and private entities to ensure the effective management of infrastructure projects.

Modern infrastructure integration models align with the principles of sustainable development by balancing economic growth with social and environmental considerations. In isolated regions such as the Republic of Tyva, infrastructure integration serves as a key mechanism for overcoming geographic isolation, improving quality of life, and stimulating economic development. The successful development and implementation of integration models require careful consideration of regional characteristics, including geographical conditions, demographic trends, and levels of socio-economic development.

THE UNIQUE CHARACTERISTICS OF THE REPUBLIC OF TYVA AND THEIR IMPACT ON INFRASTRUCTURE INTEGRATION

The Republic of Tyva stands out among Russian regions due to its strategic geographical

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location, rich cultural heritage, and complex socio-economic landscape. Its position in Central Asia presents significant accessibility challenges, as the region lacks a railway network and faces severe climatic conditions, including harsh winters in mountainous terrain. As of 2024, more than 70 % of the region's roads fail to meet compliance standards, exacerbating transport limitations [1].

The social infrastructure system in Tyva also encounters multiple challenges. The shortage of medical facilities is particularly pronounced, with an average of 1,500 residents per doctor in remote areas, exceeding the national average [2]. According to the Ministry of Education, over 40 % of schools in the region require major renovations as of 2024 [3]. Additionally, the limited availability of cultural and sports facilities constrains both recreational opportunities and the overall development prospects of the local population.

Despite these challenges, the Republic of Tyva continues to implement infrastructure projects aimed at regional development. The reconstruction of the Kyzyl – Erzin highway was completed in 2024, reducing travel times by 30 % and improving accessibility for more than 20,000 residents [4]. The planned construction of the Kyzyl – Abaza highway, which will connect Tyva with neighboring regions, is expected to create new economic opportunities. In the healthcare sector, a multifunctional medical centre is set to be launched in Kyzyl in 2025, projected to serve over 50,000 people annually, according to forecasts by the Russian Ministry of Healthcare.

The sustainable development of Tyva requires an infrastructure integration strategy that considers the region's distinctive characteristics. To achieve this, the region must actively attract investment, develop strategic plans based on modern research, and implement innovative technologies. The introduction of digital solutions, including smart city systems and automated monitoring technologies, will significantly enhance resource efficiency and improve service quality.

CONTEMPORARY INFRASTRUCTURE INTEGRATION
MODELS FOR REMOTE REGIONS AS PART OF THEIR
DEVELOPMENT FRAMEWORK

The effective integration of social and transportation infrastructure in the remote regions of the Republic of Tyva requires the adoption of cutting-edge technological solutions. The “smart city” concept represents a modern model that utilizes digital technologies to manage urban operations, particularly in the areas of transportation, energy supply, and social services. The implementation of data monitoring and analysis systems allows for a rapid response to changing population needs while optimizing resource allocation.

A key example of successful infrastructure integration in Tyva is the development of a unified transportation and logistics system, incorporating automated traffic management and transport flow monitoring. This initiative has resulted in a 25 % reduction in travel time and a 15 % increase in road safety, contributing to residential development and overall improvements in the population's quality of life [5].

In the social sector, initiatives focus on the expansion of telemedicine and distance education, helping to bridge gaps in healthcare and educational services in remote areas. In 2024, Tyva introduced remote medical consultation services, providing over 10,000 residents in isolated regions with access to qualified medical care [6]. The development of distance learning platforms is also progressing, ensuring that students and schoolchildren can receive quality education regardless of their location. In fact, academic performance levels in rural schools improved by 12 % in comparison to 2023 [7].

The integration of social and transportation infrastructure in Tyva also encompasses public space development and urban improvement projects. In 2024, the federal programme “Comfortable Urban Environment” invested in the renovation of parks and public squares in Kyzyl and other major settlements, enhancing social engagement and improving the overall quality of the urban environment [8]. These urban development initiatives not only transformed the appearance of settlements but also created attractive conditions for investment in residential construction.

Achieving long-term positive outcomes from infrastructure integration requires careful consideration of local population needs and regional environmental factors. Sustainable infrastructure development must incorporate environmental technologies and natural resource management strategies as core decision-making principles. In Tyva, the deployment of renewable energy projects, including solar and wind power facilities, has reduced dependence on centralized electricity sources and contributed to environmental sustainability [9].

The development of remote infrastructure necessitates a comprehensive, integrated approach to implementation. Modern technological advancements and innovative models not only enhance the quality of life for residents but also stimulate economic growth by creating jobs and attracting investment to the region. A well-developed infrastructure framework supports sustainable community development, enabling adaptability to changing conditions while maintaining high living standards for local populations.

CHALLENGES AND BARRIERS TO INFRASTRUCTURE
INTEGRATION IN THE TUVAN REGION

Despite the successful implementation of certain projects, the Republic of Tyva faces multiple systemic issues that hinder the effective integration of its social and transportation infrastructure. The primary challenge today revolves around insufficient financial support for infrastructure initiatives. In 2023, funding allocated for essential infrastructure projects in Tyva covered only 60 % of the required maintenance costs necessary for the region's sustainable development. This funding shortfall impedes both the modernization of existing infrastructure and the implementation of new construction projects.

Another significant challenge stems from the complex topographical conditions of the region. The combination of mountainous terrain and harsh climatic conditions substantially increases both the cost and duration of infrastructure construction projects. The Kyzyl – Abaza highway project, initially scheduled for completion in 2025, has already faced delays due to complex engineering challenges and additional environmental assessments [10].

Labour shortages further exacerbate infrastructure development difficulties. The shortage of skilled professionals in the region's construction sector slows down project completion times. According to Rosstat (2024), employment levels in Tyva's construction sector are 20 % below the national average, necessitating the recruitment of workers from other regions, which in turn increases project costs.

The lack of coordination between different levels of government and limited project management transparency complicates the integration process. Inadequate cooperation among federal, regional, and municipal authorities leads to overlapping responsibilities and inefficient resource allocation. This issue is particularly evident in the social sector, where newly constructed facilities often lack corresponding transportation infrastructure, thereby limiting service accessibility for the local population.

Environmental concerns also pose a significant obstacle to infrastructure integration. As transportation networks and residential developments expand, environmental risks such as water contamination and ecosystem degradation become increasingly pressing. The successful implementation of environmentally friendly technologies and ongoing environmental monitoring requires additional financial and organizational support [11].

FUTURE PROSPECTS FOR INFRASTRUCTURE DEVELOPMENT IN THE REPUBLIC OF TYVA

Effective planning and integration of infrastructure, along with attracting external investments, play a crucial role in the development of Tyva's social and transportation systems. The successful implementation of innovative technologies is a key factor in enhancing both the sustainability and efficiency of regional development. Infrastructure expansion is a strategic priority that not only improves the quality of life for the local population but also strengthens Tyva's integration into Russia's economic framework.

1. Transportation Infrastructure Development

As part of the federal programme "Comprehensive Development of Transport Infrastructure in the Republic of Tyva (2024–2030)", more than 500 km of new roads will be constructed, expanding the regional highway network by 20 % [12]. A key project involves the Kyzyl – Krasnoyarsk motorway and the Kyzyl – Kuragino railway link, which will create the necessary conditions for establishing logistics centres, increase regional cargo traffic by 25 %, and reduce production costs by 15 % [13].

The reconstruction of Kyzyl Airport, scheduled to begin in 2024, includes extending the runway to 3,200 meters and modernizing passenger terminals. These upgrades will enable the region to accommodate large aircraft, including Boeing 737 and Airbus A320, thereby improving air transport accessibility.

Additionally, the development of river transportation on the Yenisei River includes port infrastructure upgrades in Tura and Teele, increasing overall freight capacity by 30 %.

2. Social Infrastructure Enhancement

In 2024, as part of national healthcare and education modernization projects, Tyva will see the construction of three new medical centres and five educational facilities. A multi-profile medical centre equipped with advanced diagnostic technology will be built in Kyzyl, alongside two new schools and a 300-seat early childhood education centre.

Sports and cultural infrastructure will also undergo significant improvements. A new sports complex with an Olympic-standard swimming pool will be constructed, while existing cultural institutions, including the Tuvan Musical and Dramatic Theater, will be renovated. These measures aim to enhance healthcare and education accessibility, ultimately increasing the region's Human Development Index (HDI) by 10 % toward its target level by 2030 [14].

3. Investment and Public-Private Partnerships

Infrastructure expansion is impossible without private investment, making public-private partnerships (PPP) a cornerstone of Tyva's development strategy. In 2023, the region launched a PPP Coordination Centre, which facilitates cooperation between government agencies and private businesses. As a result, the number of joint investment projects has increased by 15 % [15].

To further stimulate investment, the regional government offers tax incentives, including a profit tax reduction to 13.5 % and a five-year exemption from property tax. In 2024, Tyva plans to attract multi-billion-ruble investments for the construction of a logistics and trade centre in Kyzyl, expected to create 500 new jobs.

4. Implementation of Modern Technologies

The adoption of digital technologies is central to improving infrastructure efficiency. Smart city systems, automated monitoring platforms, and digital mapping tools for transportation planning will be introduced across the region, optimizing resource distribution and enhancing service delivery standards [16].

A special focus is placed on energy-efficient technologies and low-carbon construction, ensuring environmental sustainability. The "Digital Tyva" project is driving regional internet connectivity expansion, with the goal of providing 95 % of residents with high-speed internet via fiber-optic networks by 2027.

RECOMMENDATIONS FOR OPTIMIZING INFRASTRUCTURE INTEGRATION

A comprehensive approach that aligns regional characteristics with modern infrastructure development trends is essential for maximizing the efficiency of social and transportation infrastructure integration in the Republic of Tyva. The key recommendations are as follows:

1. Development of Comprehensive Infrastructure Strategies

Long-term planning must be based on current demographic trends, economic demand projections, and future growth forecasts. Strategic plans should incorporate the region's geographical challenges, including remote and mountainous areas, to optimize resource allocation and reduce costs. The use of statistical data from Rosstat and regional authorities will allow for more accurate planning. A comprehensive transportation development strategy could reduce logistics costs by 20 % while improving overall accessibility [17].

2. Promotion of Private Investment and Public-Private Partnerships (PPP)

To stimulate private sector participation, tax incentives, simplified administrative procedures, and stability guarantees must be established. The successful PPP model in Krasnoyarsk Krai, which has significantly improved transport services, serves as an example for Tyva. The creation of special economic zones should be encouraged to attract business investment, aiming to increase private capital inflows by 25 % by 2027 [18].

3. Implementation of Innovative Technologies and Digital Solutions

The adoption of smart infrastructure technologies, such as automated monitoring systems for roads and buildings, along with digital project management tools, will enhance budget transparency and operational efficiency. The deployment of intelligent lighting systems and smart traffic management solutions is projected to reduce energy consumption by 15 % and travel times by 10 %.

4. Development of Human Capital for Infrastructure Projects

Expanding the qualified workforce in the construction and infrastructure sectors requires targeted education and training programmes. Efforts should focus on recruiting skilled specialists from other regions while simultaneously strengthening local expertise through vocational training and internship programmes. Collaborating with leading Russian universities to establish specialized departments within Tyva's educational institutions will be essential. These measures aim to increase the number of skilled workers by 30 % across the region by 2030.

5. Consideration of Environmental Factors

All infrastructure projects must undergo mandatory environmental impact assessments to minimize ecological risks. Sustainable construction techniques, including the use of energy-efficient materials and renewable energy sources, should be prioritized to ensure eco-friendly development. Special attention should be given

► to preserving Tyva's unique ecosystems while accounting for the region's climatic conditions. The adoption of green technologies is expected to reduce regional carbon emissions by 12 % over the next decade.

6. Expansion of Logistics Infrastructure

Strengthening the transportation and logistics network through the development of transport hubs and modern logistics centres will lower freight costs and improve regional accessibility. The integration of multimodal transport corridors and the modernization of warehouse complexes will facilitate a 20 % increase in freight traffic while reducing delivery times by 15 % [19].

7. Adoption of International Best Practices

The study and adaptation of successful global infrastructure models will accelerate regional development. Scandinavian sustainable construction techniques can provide valuable insights for Tyva, given its challenging climate. Additionally, Canada's and Switzerland's infrastructure management strategies should be examined for their resilience to climate-related challenges. Implementing these approaches will enhance the durability and adaptability of Tyva's infrastructure in response to environmental conditions.

The integration of social infrastructure, transportation, and residential development within the Republic of Tyva is crucial for ensuring the region's long-term sustainability. A comprehensive approach — incorporating strategic planning, investment mobilization, innovation adoption, and human capital development is essential for the success of infrastructure projects.

Infrastructure development delivers two key benefits: the enhanced quality of life for the population and improved economic performance, alongside better transportation services and job creation. Environmental safety and sustainable development principles must be prioritized to ensure that the benefits of these projects are long-lasting. The implementation of infrastructure projects is projected to reduce regional unemployment by 5 % and increase the regional GDP by 15 % by 2030.

This study provides valuable insights for urban planners, regional development experts, and infrastructure project managers, as well as government officials involved in the development of territorial strategies. Future research in the region should focus on evaluating the effectiveness of implemented infrastructure projects and their impact on the socio-economic development of the Tyva population, while also seeking new methods of optimizing infrastructure projects tailored to the region's challenging climatic conditions.

REFERENCES

1. Ministry of Transport of the Republic of Tyva. Report on the State of Transport Infrastructure for 2024. Kyzyl, Ministry of Transport of Tyva, 2024; 45. (rus.).

2. Federal State Statistics Service (Rosstat). Availability of Engineering and Technical Personnel by Region in Russia for 2023. URL: <https://rosstat.gov.ru> (accessed: 09.02.2025).

3. Ministry of Education of the Republic of Tyva. "Modern School" Programme : Plan for 2024–2025. Kyzyl, Ministry of Education of Tyva, 2024; 25. (rus.).

4. Administration of the City of Kyzyl. Reconstruction Project of the Kyzyl – Erzin Highway: Results and Prospects. Kyzyl, Administration of the City of Kyzyl, 2024; 22. (rus.).

5. Ministry of Construction, Housing, and Utilities of the Russian Federation. "Comfortable Urban Environment" Programme. Moscow, Ministry of Construction of the Russian Federation, 2024; 30. (rus.).

6. Ministry of Health of the Republic of Tyva. Development Plan for Medical Institutions for 2024–2025. Kyzyl, Ministry of Health of Tyva, 2024; 30. (rus.).

7. National Project "Healthcare". Development of Medical Infrastructure in Russian Regions for 2024. Moscow, Ministry of Health of the Russian Federation, 2024; 40 p. (rus.).

8. Ministry of Construction, Housing, and Utilities of the Russian Federation. Official Data on Construction Costs in Russian Regions for 2024. URL: <https://www.minstroyrf.gov.ru> (accessed: 09.02.2025). (rus.).

9. Skolkovo Foundation. Development of Renewable Energy Sources in Siberia. Moscow, Skolkovo Foundation, 2024; 45. (rus.).

10. Ministry of Ecology and Natural Resources of the Republic of Tyva. Environmental Impact Assessment of Infrastructure Projects in the Republic of Tyva for 2024. Kyzyl, Ministry of Ecology of Tyva, 2024; 35. (rus.).

11. Ministry of Natural Resources of the Russian Federation. Ranking of Environmental Risks for Transport Infrastructure in Siberia. Moscow, Ministry of Natural Resources of the Russian Federation, 2024; 35 p. (rus.).

12. Federal Project "Comprehensive Development of Transport Infrastructure of the Republic of Tyva for 2024–2030". Moscow, Ministry of Transport of the Russian Federation, 2024; 60. (rus.).

13. Ministry of Transport of the Russian Federation. Construction Project of the Kyzyl – Kuragino Railway Line: Plans and Implementation Timeline. Moscow, Ministry of Transport of the Russian Federation, 2024; 40. (rus.).

14. Government of the Republic of Tyva. Report on the Development of Social Infrastructure in 2024. Kyzyl, Government of the Republic of Tyva, 2024; 40. (rus.).

15. Republican Centre for Public-Private Partnership Support. Report on PPP Development in the Republic of Tyva for 2023. Kyzyl, PPP Centre of Tyva, 2023; 28. (rus.).

16. Ministry of Digital Development of the Republic of Tyva. Implementation of a GPS Monitoring System for Public Transport in Kyzyl. Kyzyl, Ministry of Digital Development of Tyva, 2024; 18. (rus.).

17. Ministry of Economy of the Republic of Tyva. Strategy for the Socio-Economic Development of the Republic of Tyva Until 2030. Kyzyl, Ministry of Economy of Tyva, 2024; 70. (rus.).

18. Ministry of Finance of the Republic of Tyva. Budget Report of the Republic of Tyva for 2024. Kyzyl, Ministry of Finance of Tyva, 2024; 50. (rus.).

19. Siberian Federal District. Comparative Analysis of Budget Expenditures on Infrastructure by Region for 2024. Novosibirsk, SFO Analytics, 2024; 55. (rus.).

Модели интеграции социальной и транспортной инфраструктуры в жилищном строительстве удаленных регионов: опыт Республики Тыва

В статье представлен глубокий анализ интеграции социальной и транспортной инфраструктуры в жилищном строительстве с использованием Республики Тыва в качестве примера. Уникальные географические и социально-экономические условия региона требуют тщательной оценки современных стратегий планирования и реализации инфраструктуры для

удаленных территорий России. В исследовании рассматриваются современные проблемы и барьеры, связанные с улучшением доступа к социальным услугам, обеспечением качественного обслуживания, установлением транспортной связи и содействием устойчивому региональному развитию. Особое внимание уделяется инновационным моделям и методологиям, которые способствуют эффективному функционированию различных типов инфраструктуры в текущих условиях.

В статье анализируются успешные проекты и инициативы, реализованные в Тыве, с оценкой их воздействия на уровень жизни и развитие жилищного строительства. Рассматрива-

ются ключевые факторы, способствующие эффективной интеграции инфраструктуры, такие как финансовые механизмы, участие частных инвесторов и партнерства с местными органами власти. Особое внимание уделено экологической устойчивости и ответственному управлению природными ресурсами в процессе развития как транспортной, так и социальной инфраструктуры. В дополнении исследуются методы оптимизации логистических процессов и стратегического планирования расположения социальных объектов с целью улучшения доступности для различных групп населения.

Дается комплекс рекомендаций для улучшения интеграции инфраструктуры и процессов планирования, направленных на более эффективное использование ресурсов и повышение ключевых социальных и экономических показателей на региональном уровне. Результаты данного исследования будут полезны для специалистов в области градостроительства и регионального планирования, управления инфраструктурными проектами в удаленных районах, а также для государственных органов, ответственных за разработку стратегий территориального развития.

Ключевые слова: интеграция инфраструктуры, жилищное строительство в Республике Тыва, социальная и транспортная инфраструктура, региональное развитие в удаленных районах и архитектурное планирование

СПИСОК ИСТОЧНИКОВ

1. Министерство транспорта Республики Тыва. Отчет о состоянии транспортной инфраструктуры на 2024 год. Кызыл : Министерство транспорта Республики Тыва, 2024. 45 с.
2. Федеральная служба государственной статистики (Росстат). Уровень обеспеченности инженерно-техническими кадрами по регионам России на 2023 год. URL: <https://rosstat.gov.ru> (дата обращения: 09.02.2025).
3. Министерство образования Республики Тыва. Программа «Современная школа» : план на 2024–2025 гг. Кызыл : Министерство образования Тывы, 2024. 25 с.
4. Администрация города Кызыла. Проект реконструкции автодороги Кызыл – Эрзин: результаты и перспективы. Кызыл : Администрация города Кызыла, 2024. 22 с.
5. Министерство строительства и жилищно-коммунального хозяйства Российской Федерации. Программа «Комфортная городская среда». Москва : Министерство строительства Российской Федерации, 2024. 30 с.
6. Министерство здравоохранения Республики Тыва. План развития медицинских учреждений на 2024–2025 годы. Кызыл : Министерство здравоохранения Тывы, 2024. 30 с.
7. Национальный проект «Здравоохранение». Развитие медицинской инфраструктуры в российских регионах на 2024 год. М. : Министерство здравоохранения Российской Федерации, 2024. 40 с.
8. Министерство строительства и жилищно-коммунального хозяйства Российской Федерации. Официальные данные о стоимости строительства в регионах России на 2024 год. URL: <https://www.minstroyrf.gov.ru> (дата обращения: 09.02.2025).
9. Фонд «Сколково». Развитие возобновляемых источников энергии в Сибири. М. : Фонд «Сколково», 2024. 45 с.
10. Министерство экологии и природных ресурсов Республики Тыва. Экологическая экспертиза инфраструктурных проектов в Республике Тыва на 2024 год. Кызыл : Министерство экологии Тывы, 2024. 35 с.
11. Министерство природных ресурсов Российской Федерации. Рейтинг экологических рисков для транспортной инфраструктуры в Сибири. М. : Министерство природных ресурсов Российской Федерации, 2024. 35 с.
12. Федеральный проект «Комплексное развитие транспортной инфраструктуры Республики Тыва на 2024–2030 годы». М. : Министерство транспорта Российской Федерации, 2024. 60 с.
13. Министерство транспорта Российской Федерации. Проект строительства железнодорожной линии Кызыл – Курагино: планы и сроки реализации. М. : Министерство транспорта Российской Федерации, 2024. 40 с.
14. Правительство Республики Тыва. Отчет о развитии социальной инфраструктуры в 2024 году. Кызыл : Правительство Республики Тыва, 2024. 40 с.
15. Республиканский центр поддержки государственно-частного партнерства. Отчет о развитии ГЧП в Республике Тыва за 2023 год. Кызыл : РЦ ГЧП Тыва, 2023. 28 с.
16. Министерство цифрового развития Республики Тыва. Введение системы GPS-мониторинга общественного транспорта в Кызыле. Кызыл : Министерство цифрового развития Тывы, 2024. 18 с.
17. Министерство экономики Республики Тыва. Стратегия социально-экономического развития Республики Тыва до 2030 года. Кызыл : Министерство экономики Тывы, 2024. 70 с.
18. Министерство финансов Республики Тыва. Отчет о бюджете Республики Тыва на 2024 год. Кызыл : Министерство финансов Тывы, 2024. 50 с.
19. Сибирский федеральный округ. Сравнительный анализ бюджетных расходов на инфраструктуру по регионам на 2024 год. Новосибирск : СФО Аналитика, 2024. 55 с.

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