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RESEARCH ARTICLE

Analysis of Local Budget Allocations for the Protection of Specially Protected Areas in Mongolia

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ABSTRACT

As biodiversity declines and the importance of ecosystem services to human well-being become increasingly evident, environmental protection has emerged as a vital public function. This function is largely fulfilled through the designation and management of specially protected areas, which form the backbone of environmental policies worldwide. Governments play a crucial role in embedding these policies across sectors, ensuring that they support sustainable growth when adequately represented in budget planning. While the benefits of conserving protected areas have a wide-reaching impact from local to global scales, the financial burden of conservation frequently falls to local authorities. Often lacking sufficient resources, these authorities face challenges in addressing large-scale environmental issues like climate change and biodiversity loss. In Mongolia, for example, functions for protecting natural reserves, national monument area and locally protected areas are delegated to provincial and capital levels, which must fund these efforts from their own budgets. However, nationwide, these conservation efforts are often underfunded. This shortfall primarily results from local authorities' limited consideration of ecological indicators, such as the size and classification of protected areas, during the budget planning and approval process for preserving these essential spaces.

INTRODUCTION

With biodiversity rapidly declining and the value of ecosystem services for human well-being increasingly recognized, environmental protection has become a critical public function (Cardinale et al., 2012; Isbell et al., 2023). Central to this role is the establishment of specially protected areas, widely regarded as one of the most effective forms of environmental preservation (Duckworth and Altwegg, 2021). These protected areas help maintain natural ecosystems, sustain biosphere balance, and support essential ecological processes. They are vital for safeguarding rare and endangered species, preserving historical and cultural sites, and maintaining natural landscapes for future generations, as well as promoting sustainable development globally (Dash et al., 2003; Allendorf, 2022).

Public environmental mandates are largely fulfilled through the designation and protection of such areas, with budget allocations being key to implementing these objectives (Dulamsuren and Enkhbat, 2005). Proper budget financing prevents pollution, ensures sustainable use, supports restoration efforts, and facilitates effective monitoring. Such funding is essential for effective management and conservation of specially protected areas (Leverington et al., 2010; Watson et al., 2014; Oliveira and Bernard, 2017;). This article provides an overview of the classification and functional allocation of protected areas in Mongolia, analyses local budget expenditures related to these functions, and examines provincial and municipal budget funding sources for protected area management. Finally, it offers insights and recommendations for improving budget allocation of specially protected areas in Mongolia.

Study area

Protecting land as a specially designated area is a globally accepted method for curbing environmental degradation (Dash et al., 2003). This protection preserves natural ecological processes and relationships while allowing humanity to safeguard irreplaceable natural, historical, cultural, and scientific heritage across generations, furthermore, it plays a crucial role in maintaining ecological balance and supporting sustainable development globally (Allendorf, 2022; Dash et al., 2003). Protecting areas of high ecological value also has the unique benefit of preserving entire ecosystems, thus helping species survive within their natural habitats and reducing the risk of ecosystem imbalance at both local and regional levels, ultimately providing a healthier environment for human populations (Daily et al., 1997; Figueiroa et al., 2020).

In addition, protected areas encompass other valuable natural resources. For example, in Mongolia, protected lands contain 39.2% of the nation's forest reserves, sources of major rivers, 50% of the surface water supply, and are home to over 300 endangered or vulnerable species, including animals, plants, and notable historical and cultural sites and approximately 80% of these crucial resources are located within protected areas (Ministry of Environment and Tourism of Mongolia, 2021). Mongolia's protected areas are classified into national and local categories, with the national specially protected areas divide into four types: national conservation park (NCP), natural complex area (NCA), natural reserve (NR) and natural monument area (NMA).

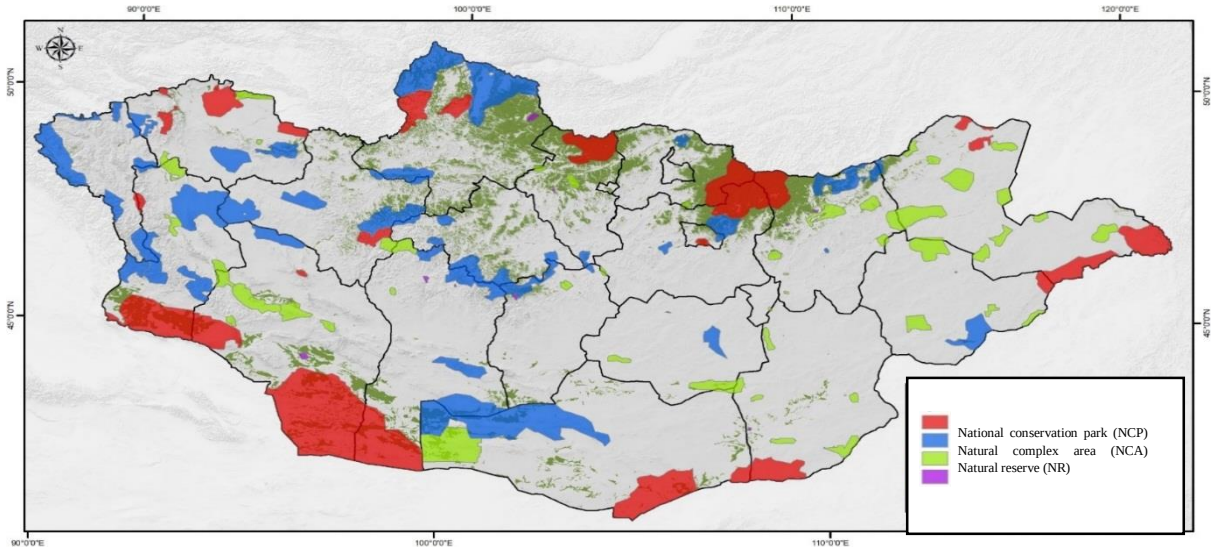

Figure 1: Classification of national specially protected area in Mongolia

Source: (Ministry of Environment and Tourism of Mongolia, 2021).

In Mongolia, there are 120 national protected areas spanning 32.8 million hectares, categorized as follows: 22 NCP covering 13.8 million hectares, 36 NCA covering 13.2 million hectares, 47 NR covering 5.7 million hectares, and 14 NMA covering 0.1 million hectares. These national protected areas encompass 21.0% of the country's territory. Additionally, 1401 locally protected areas (LPA) span 24.6 million hectares, accounting for 19.4% of Mongolia's land area (Ministry of Environment and Tourism of Mongolia, 2021).

According to Law of Mongolia on specially protected areas, functions for managing these areas are assigned based on the classification of the protected area. Nationally protected sites, such as NCP and NCA, are managed by the central government, specifically by the Ministry of Environment and Tourism. In contrast, local governments at the provincial and municipal levels are responsible for managing NR, NMA and LPA.

The primary source of funding for conservation comes from budget allocations to protected area agencies. This funding can be optimized by demonstrating the economic benefits that protected areas can generate (Buckley and Chauvenet, 2022; Chaplin-Kramer et al., 2019; Leclère et al., 2020; Maxwell et al., 2020). In accordance with the principle that "funds follow functions" (Byambayar et al., 2023), NCP and NCA receive funding directly from the state budget, whereas local governments

are responsible for allocating their budgets to manage NR, NMA and LPA. The next section will analyze the budgetary allocations in local government expenditures for the protection of these areas.

MATERIALS AND METHODS

This analysis focuses on the local budget allocations for the conservation of 30.4 million hectares of protected land across 1,462 sites in Mongolia, including NR, NMA, and LPA. Data from the Budget utilization report of Mongolia (2015–2023) provided the foundation for this analysis, and a descriptive statistical analysis method was applied to interpret the findings. Below is a summary of local government budget allocations for protected area conservation.

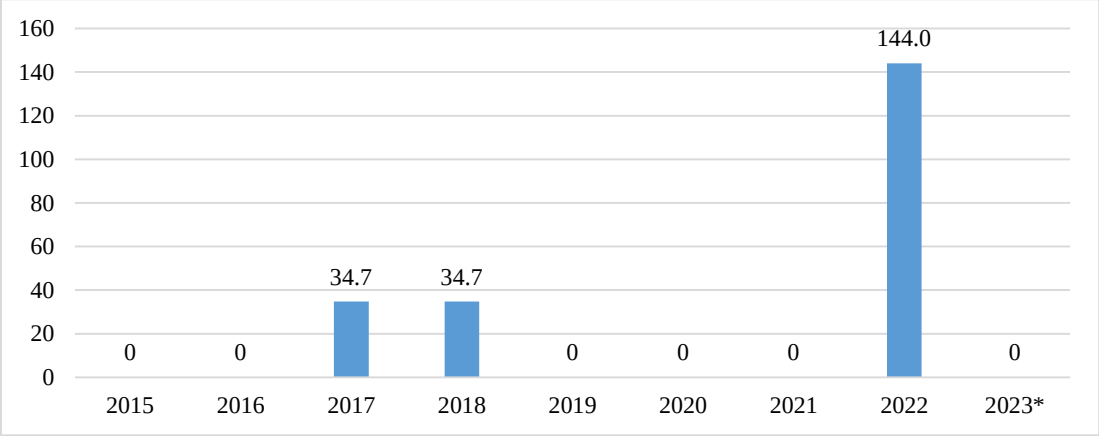

Figure 2: Local budget allocations for protected area conservation, 2015-2023 (in million MNT)

*Source: Author's calculations based on data from the Ministry of Finance (https://mof.gov.mn/data_grid/total-budget) Note: *expected budget execution.*

As shown (Fig. 2.), there were no local budget allocations for protected areas during 2015–2016, 2019–2021, and 2023. However, in 2017 and 2018, a total of MNT 34.7 million was allocated, specifically for the Dornogovi province. In 2022, the budget for these conservation tasks was MNT 144 million. The breakdown of this allocation for each province in 2022 is as follows:

Table 1: Local budget allocation for protected area conservation projects and events, 2022 (in million MNT)

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Source: Author's calculations based on resolutions from the 2022 Provincial Budget of Dornod, Govisumber, and Khentii.

The budget shows that only Dornod, Govisumber, and Khentii provinces allocated funds for specific conservation measures in 2022, while the remaining provinces did not allocate funds for the protection and restoration of protected areas. Within Khentii Province, there are several significant state special protected areas, including Darkhan-Uul NR, Delgerkhaan Mountain NR, Ulz River NR, Khurkh Khuiten Valley NR, Kherlen Toono Mountain NR, Toson Khulstai NR, Khangal Lake NR, and Binderiya Khan-Uul NR among others, along with 354 LPA. However, the budget and conservation activities are solely focused on Darkhan-Uul NR, with no allocation or planning made for the other protected areas. In Govisumber province, there is the Choiriin Bogd Uul NR alongside 19 locally protected areas, yet only 12 million MNT was allocated for conservation in the 2022 budget—an insufficient amount to meet conservation needs. In comparison, Dornod province contains 9 NR and 8 LPA, which are overseen by the Dornod province Environmental Protection Agency. This agency has received the highest budget allocation among the provinces, especially when compared to other regions. Overall, an analysis of planned and actual conservation budgets across 18 provinces and Ulaanbaatar reveals that 87% of these administrative regions have not allocated any funds for the

protection of NR, NMA and LPA. Only Khentii, Dornod, and Govisumber have made concrete conservation and restoration plans.

These three provinces account for the entirety of local conservation funding, which highlights the disparity when compared to central government allocations. In 2022, the central government allocated 10.6 billion MNT to manage 58 protected sites covering 27.1 million hectares (Namkhairinchen, 2023), whereas local governments are functioning for a larger protected area (1.12 times that of central government-managed lands) but received a budget 106 times smaller. This funding insufficiency may be due to a lack of budget planning or inadequate financing sources at the local level. Therefore, it is crucial to examine how these conservation costs are calculated and funded.

First, the costs related to implementing local functions are planned, approved, and executed based on the "Methodology for estimation of base-line expense of local budget" approved by the Mongolian Government's Resolution No. 30 of 2012. According to this methodology, the expenses related to protecting locally protected areas are calculated by considering whether the locality will establish boundary demarcations and a protection regime for areas not included in national specially protected areas. This approach implies that budget planning and funding for protecting local protected areas only consider this specific locally protected area and exclude ecological indicators, such as the size and classifications of NR and NMA. Consequently, expenses for protecting NR and NMA are not incorporated into the base-line expense of local budget, leaving these two categories inadequately addressed in terms of conservation funding.

Second, while local budget funding should finance expenses associated with legally mandated local functions or base-line expenses, this funding may fall short due to limited local budget resources. According to the Budget law, local budget funding sources consist of three main components: base-line income of local budget, financial support, and income. On average, base-line income comprises 56% of the local budget, while the remaining 44% is generated through special-purpose transfer, financial support, and income transfer (Table 2).

Table 2: Structure of total local budget revenue, Mongolia, 2015-2023 (in million MNT)

Source: Author's calculations based on data from the Ministry of Finance (https://mof.gov.mn/data_grid/total-budget) Note: *expected budget execution.

From 2013 to 2021, the Mongolian government utilized earmarked transfers to fund essential public services such as preschool and primary education, primary health services, land management and cadastral services, as well as child development and protection services. However, this system of earmarked was discontinued as of 2022. Presently, local budget revenue is comprised of three sources:

Base-line income: That income includes tax and non-tax income calculated at minimum percent that are allocated to the local level (Namkhairinchen, 2022). For example, the province and capital city budget include corporate income tax (40%), tax on motor vehicles and self-propelled vehicles, water-resource-use fees for industrial and services, among other local taxes. Tax revenue forms a stable core of local budgets, making up about 92-95% of base-line local income, while non-tax income comprises the remaining 5-8%.

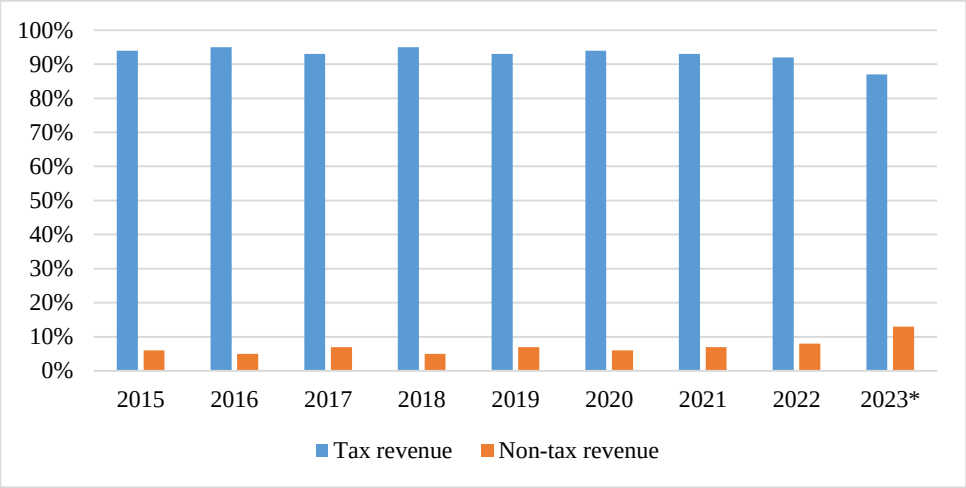

Figure 3: Trend of base-line local income, 2015-2023, (in percentages)

Source: Author's calculations based on data from the Ministry of Finance (https://mof.gov.mn/data_grid/total-budget) Note: *expected budget execution.

For instance, tax revenue in 2022 reached MNT 2.4 trillion, comprising 92% of the total base-line local revenue. However, the base-line expenditures related to local government functions—such as conservation of specially protected areas—often exceed this base-line revenue in most provinces. This gap indicates that most of the local governments cannot fully fund their functions through their own revenue alone. For example, as of 2022, the budgets of 15 provinces showed deficits, while six provinces, including Selenge, Umnugovi, Dornogovi, Dornod, Darkhan-Uul, Orkhon and Ulaanbaatar city showed a budget profit (Fig. 4.).

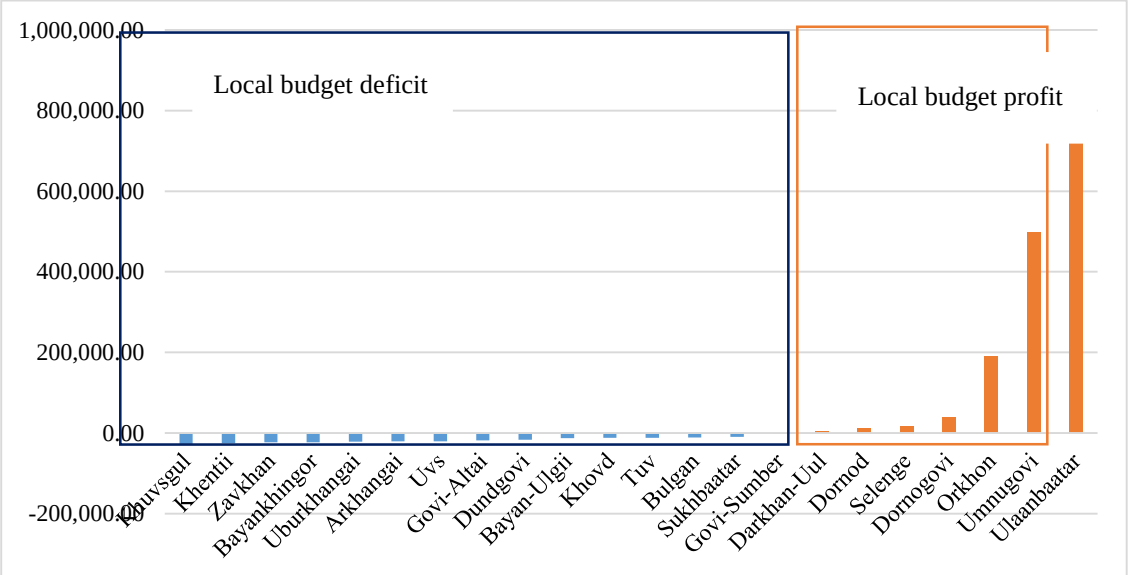

Figure 4: Base-line balance of local budgets, 2022 (in million MNT)

Source: Author's calculations based on data from the Ministry of Finance (https://mof.gov.mn/data_grid/total-budget) Note: *expected budget execution.

These differences stem from geographical, demographic, and economic factors that affect revenue-raising capacity and service costs at the local level. For instance, Khuvsgul and Uvurkhangai provinces showed deficits of MNT 27 billion and MNT 21 billion, respectively, while Umnugovi province and Ulaanbaatar city reported surpluses of MNT 299 billion and MNT 533 billion, respectively. The discrepancy between Khuvsgul and Ulaanbaatar city reaches MNT 550 billion. When a local government's basic expenditure exceeds its revenue, higher-level government support is provided to cover the deficit.

Financial support: The allocation of financial support from the state budget to local governments is a practice found in all countries, regardless of development level Namkhairinchen, 2022). However, the methods and principles for distribution vary significantly. In Mongolia, financial support is allocated based on the gap between local base-line revenues and base-line expenditures, also known as the core budget balance deficit. Base-line local expenditures account for about 25% of total local government expenditures. When viewed in aggregate, base-line balance results show a net positive, but this balance heavily depends on the revenues generated in mining-rich provinces such as Selenge, Umnugovi, Dornogovi, Dornod, Darkhan-Uul, and Orkhon, as well as Ulaanbaatar City.

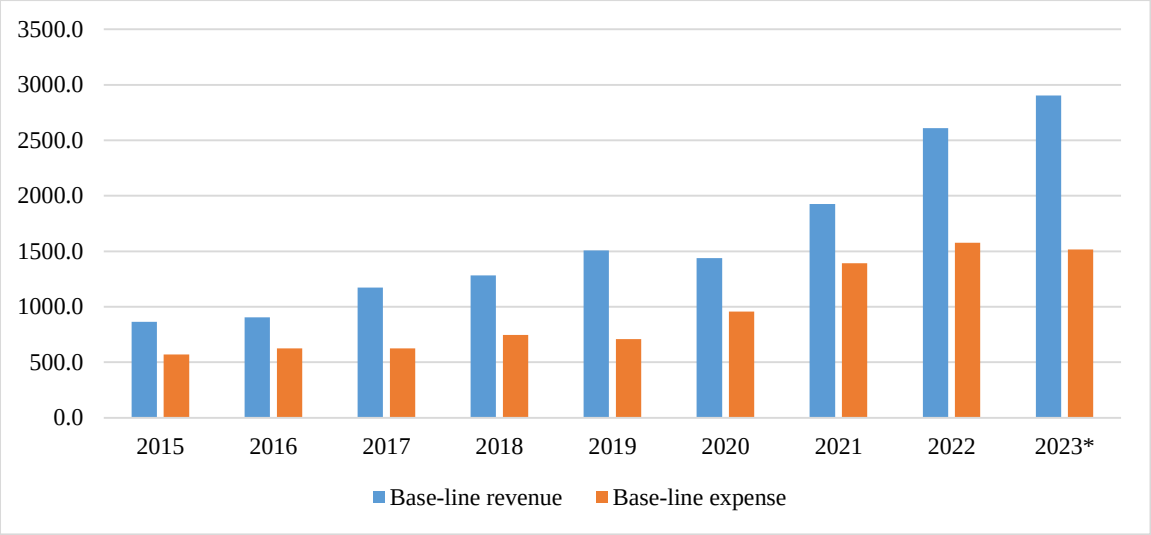

Figure 4: Base-line local budget revenue and expenditure, 2015-2023

Source: Author's calculations based on data from the Ministry of Finance (https://mof.gov.mn/data_grid/total-budget) Note: *expected budget execution.

In Mongolia, the remaining 15 provinces consistently experience local budget deficits each year. To offset these deficits, the state provides over MNT 150 billion annually from the state budget (Fig. 5).

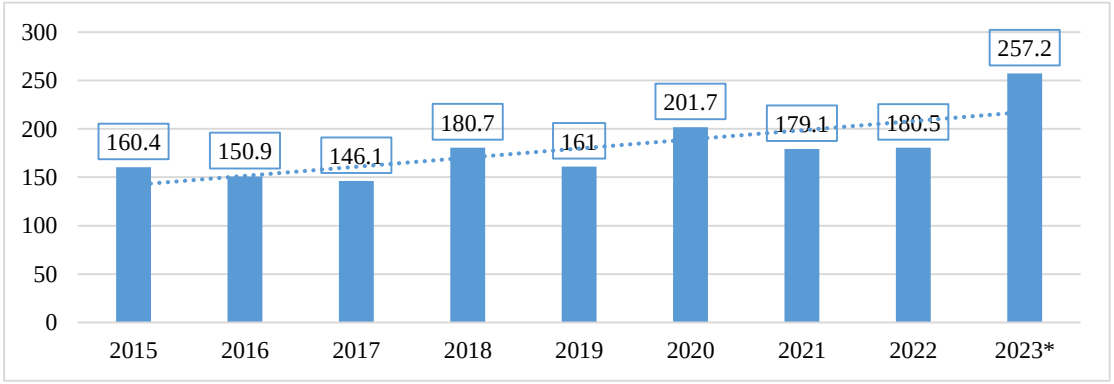

Figure 5: Total amount of financial support, 2011-2023 (in million MNT)

Source: Author's calculations based on data from the Ministry of Finance (https://mof.gov.mn/data_grid/total-budget) Note: *expected budget execution.

On average, the provinces that receive financial support fund around 48% of their total basic expenditures through this mechanism.

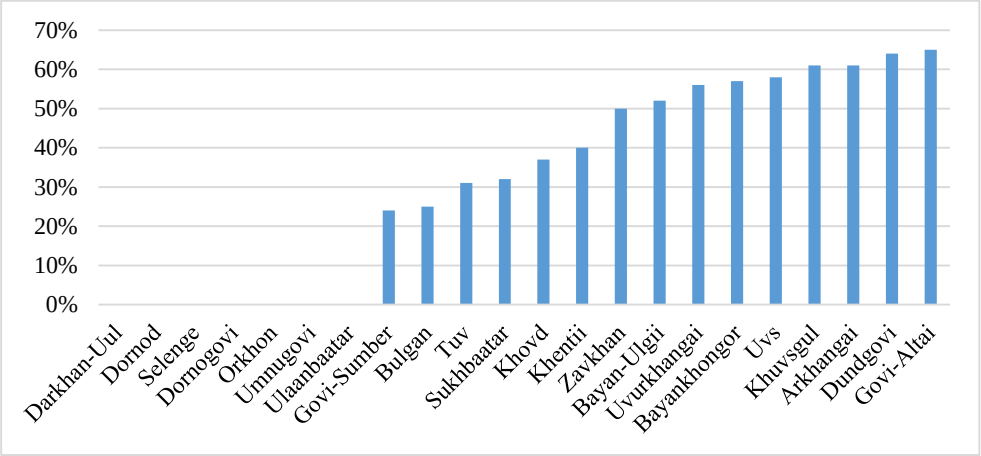

Figure 6: Proportion of financial support in local budget funding by province and capital city, 2022 (in percentages)

Source: Author's calculations based on data from the Ministry of Finance (https://mof.gov.mn/data_grid/total-budget) Note: *expected budget execution.

This level of financial support indicates that these provinces can cover approximately 52% of their legally mandated functions using their own revenue. However, because the local tax revenue base is limited, most local governments cannot increase their revenue in line with rising expenditures. Therefore, the number of provinces reliant on state financial support is unlikely to decrease significantly (Namkhairinchen, 2022). Furthermore, as previously mentioned, while expenditures for protecting locally protected areas should be included in the basic expenses of local budgets, the "Methodology for estimation of base-line expense of local budget" fails to account for expenses related to NR and NMA. Consequently, the costs associated with protecting these areas are not included in the initial budgeting, making it difficult to fund these functions through base-line revenue or financial support alone. This leads us to examine the third source of local budget funding: revenue transfer.

Revenue transfer: The Budget Law established Mongolia's first "Unified Local Development Fund (ULDF)". This fund aims to support local development and ensuring regional balance by reallocating funds from the state budget to local budgets (Dombrowsky et al., 2018). Through this fund, revenue transfers are provided to provinces and the capital city, which then allocate resources to the local development funds of their respective soums (districts) and duuregs (sub-districts) following a set methodology. The fund is primarily financed from 10% of payment income for using mineral resources, 30% of payment income for using petroleum oil reserve, and donations or other forms of aid.

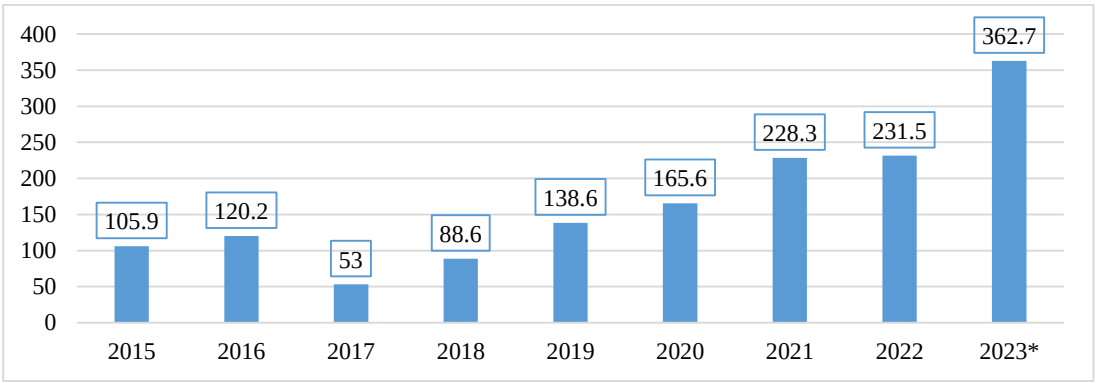

Figure 7: Amount transferred from ULDF, 2013-2022 (in million MNT)

Source: Author's calculations based on data from the Ministry of Finance (https://mof.gov.mn/data_grid/total-budget) Note: *expected budget execution.

Revenue from the ULDF can be allocated to various sectors, including health, education, culture, innovation, science, and digital technology; infrastructure, such as roads, bridges, canals, electricity, and heating systems; environmental protection and green spaces; water supply and sanitation; and project planning, feasibility studies. This means that local governments (at the province, capital, soum, and duureg levels) can use revenue transfers from the Local Development Fund (LDF) for conservation and environmental restoration efforts.

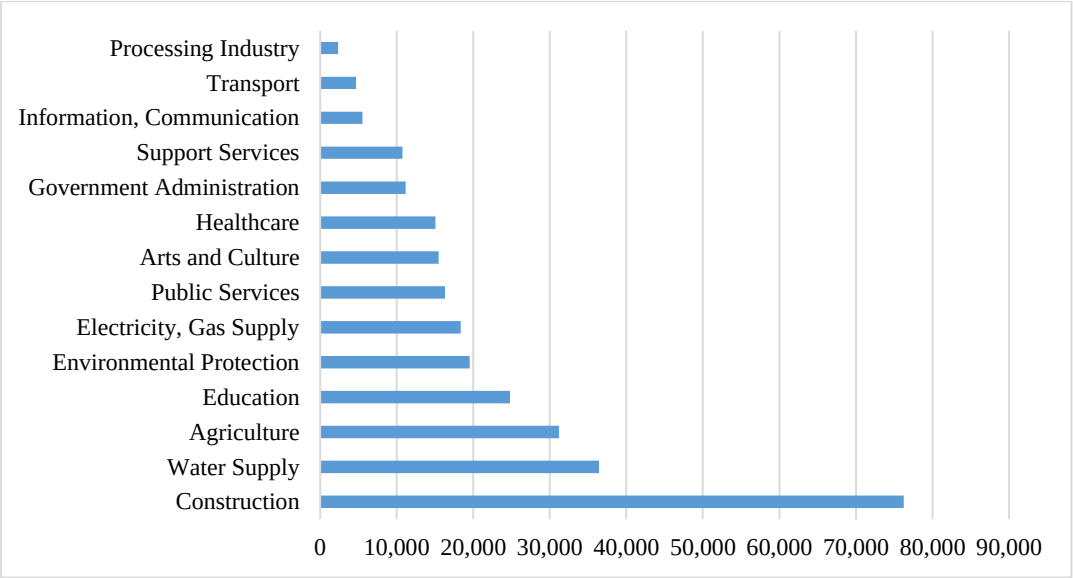

Figure 8: ULDF expenditure by sector, 2022 (in million MNT)

Source: Author's calculations based on data from the Ministry of Finance (https://mof.gov.mn/data_grid/total-budget) Note: *expected budget execution.

As of 2022, expenditures from the ULDF totaled MNT 287 billion. Of this amount, 26% (MNT 76.2 billion) was allocated to construction, 13% (MNT 36.4 billion) to water supply, and 11% (MNT 31.1 billion) to agriculture. Environmental conservation received only MNT 19.5 billion, accounting for 7% of the total ULDF, with no funds specifically allocated for protected area conservation. Given the Fund's focus on local development and regional balance, resources tend to be directed more toward infrastructure, water supply, and agriculture rather than environmental conservation and protected areas. Consequently, spending from the fund on environmental protection and protected area conservation is at the discretion of local authorities and is not mandated. Inadequate financing is one of the primary barriers to achieving conservation goals (Droste et al., 2019; Balmford et al., 2003; Hill et al., 2015; McCarthy et al., 2012; Ring et al., 2018; Waldron et al., 2013). Although the environmental benefits of conserving protected areas extend from local to global scales, the financial burden of conservation often falls on local authorities, which frequently lack sufficient resources to tackle broad environmental challenges like climate change and biodiversity loss (Busch et al., 2021, p. 756).

DISSCUSSION AND CONCLUSIONS

The benefits of protecting specially protected areas extend from the local level to the global scale. However, local authorities primarily bear the financial burden for conservation efforts, leading to significant underfunding in tackling environmental issues like climate change and biodiversity loss (Busch et al., 2021). This issue highlights the urgent need for sufficient funding to support conservation and restoration initiatives effectively.

Currently, local budgets do not account for essential factors such as the size and category of NR, NMA costs often omitted from base-line expense of local budget. This has resulted in neglecting the conservation needs of national protected areas, such as NR and NMA. Although local governments could theoretically fund conservation efforts from local own revenues, the revenue transfer, and financial support, budget allocations tend to focus more on infrastructure and regional development rather than environmental initiatives.

While the central government allocates MNT 10.6 billion from the state budget to manage 27.1 million hectares of NCP and NCA, local governments spend only MNT 0.1 billion on 30.4 million hectares of NR, NMA and LPA. Despite local protected areas covering 1.12 times more land than those managed by the central government, their budget allocation for conservation is 106 times smaller, indicating inefficiencies in the current funding allocation model.

Financial support allocation practices in Mongolia focus on bridging the gap between the base-line expenses and revenue of local budget. However, the methodology for calculating base-line expense does not consider specific local ecological indicators, such as the size or category of NR and NMA, making it challenging to ensure sufficient conservation funding.

As ULDF are primarily allocated for infrastructure, water supply, and agriculture rather than environmental conservation, it would be essential to mandate that a specified percentage of these funds be dedicated to specially protected area conservation efforts. This change could support sustainable management and the protection of these specially protected areas.

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REFERENCES

Allendorf, T. D. (2022). A global summary of local residents' perceptions of benefits and problems of protected areas. *Biodiversity and Conservation*, *31*(2), 379–396.

Balmford, A., Gaston, K. J., Blyth, S., James, A., & Kapos, V. (2003). Global variation in terrestrial conservation costs, conservation benefits, and unmet conservation needs. Proceedings of the National Academy of Sciences, 100, 1046–1050, https://www.researchgate.net/publication/10930864_Global_variation_in_terrestrial_conservation_costs_conservation_benefits_and_unmet_conservation_needs

Buckley, R. C., & Chauvenet, A. L. M. (2022). Economic value of nature via healthcare savings and productivity increases. *Biological Conservation*, *272*, N.PAG-N.PAG. https://doi.org/10.1016/j.biocon.2022.109665

Busch, J., Ring, I., Akullo, M., Amarjargal, O., Borie, M., Cassola, R. S., Cruz-Trinidad, A., Droste, N., Haryanto, J. T., Kasymov, U., Kotenko, N. V., Lhkagvadorj, A., De Paulo, F. L. L., May, P. H., Mukherjee, A., Mumbunan, S., Santos, R., Tacconi, L., Verde Selva, G., … Zhou, K. (2021). A global review of ecological fiscal transfers. *Nature Sustainability*, *4*(9), 756–765. https://doi.org/10.1038/s41893-021-00728-0

Byambayar Ya, Tumentsogtoo T, Delgerjargal Ts, Oyuntsetseg D, & Mungunchimeg Sh. (2023). *Issues of Local Self-Governance: A Study on the Implementation of Local Functions Stipulated in the Law on Administrative and Territorial Units and Their Governance of Mongolia*. Admon Print. https://sudalgaa.gov.mn/nutgiyn-ooriyn-udirdlagyn-asuudluud-mongol-ulsyn-zasag-zakhirgaa-nut-xkh (in Mongolian)

Cardinale, B. J., Duffy, J. E., Gonzalez, A., Hooper, D. U., Perrings, C., Venail, P., Narwani, A., Mace, G. M., Tilman, D., Wardle, D. A., Kinzig, A. P., Daily, G. C., Loreau, M., Grace, J. B., Larigauderie, A., Srivastava, D. S., & Naeem, S. (2012). Biodiversity loss and its impact on humanity. *Nature*, *486*(7401), 59–67. https://doi.org/10.1038/nature11148

Chaplin-Kramer, R., Sharp, R. P., Weil, C., Bennett, E. M., Pascual, U., Arkema, K. K., Brauman, K. A., Bryant, B. P., Guerry, A. D., Haddad, N. M., Hamann, M., Hamel, P., Johnson, J. A., Mandle, L., Pereira, H. M., Polasky, S., Ruckelshaus, M., Shaw, M. R., Silver, J. M., … Daily, G. C. (2019). Global modeling of nature's contributions to people. *Science*, *366*(6462), 255–258. https://doi.org/10.1126/science.aaw3372

Daily, G., Postel, S., Bawa, K., & Kaufman, L. (1997). Nature's Services: Societal Dependence On Natural Ecosystems. *Bibliovault OAI Repository, the University of Chicago Press*.

Dash D, Jalbaa KH, Khaulenbyk A, & Mandakh N. (2003). *Scientific Basis for the Restoration and Conservation of Gobi and Steppe Ecosystems*. Institute of Geology, Mongolian Academy of Sciences. https://eic.mn/dldbase/upload/2012/tadesertbook/3/20121220_6190_3.pdf (in Mongolian)

Dombrowsky, I., Lkhagvadorj, A., & Schoderer, M. (2018). *River basin management and fiscal decentralisation: Mutually supportive or counterproductive? A case study of Mongolia*. Discussion Paper. https://www.econstor.eu/handle/10419/199530

Droste, N., Farley, J., Ring, I., May, P. H., & Ricketts, T. H. (2019). Designing a global mechanism for intergovernmental biodiversity financing. *Conservation Letters BECC: Biodiversity and Ecosystem Services in a Changing Climate*, *12*(6). https://doi.org/10.1111/conl.12670

Duckworth, G. D., & Altwegg, R. (2021). Why a landscape view is important: Nearby urban and agricultural land affects bird abundances in protected areas. *PeerJ*, *9*, e10719–e10719. https://doi.org/10.7717/peerj.10719

Dulamsuren D & Enkhbat A. (2005). *Macroeconomic Financial Program*. NUM press. https://catalog.num.edu.mn/cgi-bin/koha/opac-detail.pl?biblionumber=17316 (in Mongolian)

Figueiroa, A. C., de Lima, A. de S., Scherer, M. E. G., & Bonetti, J. (2020). How to choose the best category for a protected area? A multicriteria analysis method based on ecosystem services conservation. *Environ Monit Assess*, *192*(7), 416–416.

Hill, R., Dyer, G. A., Lozada-Ellison, L. M., Gimona, A., Martin-Ortega, J., Munoz-Rojas, J., & Gordon, I. J. (2015). A social-ecological systems analysis of impediments to delivery of the Aichi 2020 Targets and potentially more effective pathways to the conservation of biodiversity. Global Environmental Change, 34, 22–34, https://researchonline.jcu.edu.au/42703/

Isbell, F., Balvanera, P., Mori, A. S., He, J.-S., Bullock, J. M., Regmi, G. R., Seabloom, E. W., Ferrier, S., Sala, O. E., Guerrero-Ramírez, N. R., Tavella, J., Larkin, D. J., Schmid, B., Outhwaite, C. L., Pramual, P., Borer, E. T., Loreau, M., Omotoriogun, T. C., Obura, D. O., … Palmer, M. S. (2023). Expert perspectives on global biodiversity loss and its drivers and impacts on people. *Frontiers in Ecology and the Environment*, *21*(2), 94–103. https://doi.org/10.1002/fee.2536

Leclère, D., Obersteiner, M., Barrett, M., Butchart, S., Chaudhary, A., De Palma, A., Declerck, F., Di Marco, M., Doelman, J., Dürauer, M., Freeman, R., Harfoot, M., Hasegawa, T., Hellweg, S., Hilbers, J., Hill, S., Humpenöder, F., Jennings, N., Krisztin, T., & Young, L. (2020). Bending the curve of terrestrial biodiversity needs an integrated strategy. *Nature*, *585*, 1–6. https://doi.org/10.1038/s41586-020-2705-y

Leverington, F., Hockings, M., Pavese, H.,. Costa, K. T. and Courrau, J (2008) *Management effectiveness evaluation in protected areas–a Global Study (2nd Edition)*. The University of Queensland, Brisbane, Australia. https://portals.iucn.org/library/sites/library/files/documents/2010-092.pdf

Maxwell, S. L., Cazalis, V., Dudley, N., Hoffmann, M., Rodrigues, A. S. L., Stolton, S., Visconti, P., Woodley, S., Kingston, N., Lewis, E., Maron, M., Strassburg, B. B. N., Wenger, A., Jonas, H. D., Venter, O., & Watson, J. E. M. (2020). Area-based conservation in the twenty-first century. *Nature*, *586*(7828), 217–227. https://doi.org/10.1038/s41586-020-2773-z

McCarthy, D. P., Donald, P. F., Scharlemann, J. P. J. P.W., Buchanan, G. M., Balmford, A., Green, J. M. H., … Butchart, S. H. M. (2012). Financial costs of meeting global biodiversity conservation targets: Current spending and unmet needs. Science, 338, 10–13, https://pubmed.ncbi.nlm.nih.gov/23065904/

Ministry of Environment and Tourism of Mongolia. (2021). *Mongolia's Environmental Status Report 2019-2020*. https://forest.gov.mn/website/news.aspx?id=109 (in Mongolian)

Namkhairinchen M. (2022). The basic local budget deficit in Mongolia. *Public Administration: Theory and Methodology Journal*, *4(21)*. http://catalog.naog.gov.mn/cgi-bin/koha/opac-detail.pl?biblionumber=25149 (in Mongolian)

Namkhairinchen M. (2023). Status quo of environmental budget financing in Mongolia. *Governance Theory and Practical Issues: Research Journal 1(27)*. http://catalog.naog.gov.mn/cgi-bin/koha/opac-detail.pl?biblionumber=25390&query_desc=kw%2Cwrdl%3A%20%D0%9C.%D0%9D%D0

%B0%D0%BC%D1%85%D0%B0%D0%B9%D1%80%D0%B8%D0%BD%D1%87%D1%8D%D0%BD (in Mongolian)

Oliveira, A. P. C., & Bernard, E. (2017). The financial needs vs. the realities of in situ conservation: An analysis of federal funding for protected areas in Brazil's Caatinga. *Biotropica*, *49*(5), 745–752. https://doi.org/10.1111/btp.12456

Waldron, A., Mooers, A. O., Miller, D. C., Nibbelink, N., Redding, D., & Kuhn, T. S. (2013). Targeting global conservation funding to limit immediate biodiversity declines. Proceedings of the National Academy of Sciences, 110, 1–5, https://www.pnas.org/doi/10.1073/pnas.1221370110

Watson, J.E.M., Dudley, N., Segan, D.B. and Hockings, M. (2014). The performance and potential of protected areas. *Nature*, 515, 67–73. https://www.researchgate.net/publication/267933319_The_performance_and_potential_of_protected_areas