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Innovation, information systems and institutional roles: the interactive effects of international non-governmental organization on health and education in Afghanistan, 2020–2025

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Abstract. The end of the political transition in Afghanistan in August 2021 altered radically the spheres of activities of International Non-Governmental Organizations (INGOs), compelling them to make an urgent change in priorities, making the development-focused programming change to emergency humanitarian response. This paper explores the combined effect of INGOs on the health and education sector in Afghanistan during the 2020-2025 timeframe, specifically how innovation and Information Systems (IS) have helped the service delivery to be sustained in the face of extreme institutional and political constraints. The paper uses a mixed-methodology approach to review secondary data concerning key health and education indicators, as well as a thematic analysis of the operational strategies of INGOs. The quantitative data show that the female secondary school enrollment (38.5 percent in 2020 and estimated 1.5 percent in 2025) fell precipitously, and the Maternal Mortality Ratio (MMR) increased, indicating the humanitarian crisis. On the other hand, the INGO health coverage became even more important with a manifestation of their urgency as the main service provider. Qualitative analysis revealed that the introduction of sustainable, localized information systems, particularly remote monitoring and resource tracking, was the key institutional innovation that enabled the INGO to achieve approximately 82 % resource allocation efficiency after the transition, compared to 65 % before the transition. The paper concludes that INGOs have played an essential role in ensuring that there is no complete breakdown of vital services, but their overall effect in the long term is limited due to the absence of a consistent institutional structure and policy limitations. Policy recommendations focus on the necessity to have long-term, adaptable funding, and investment in digital resilience and a localized approach to service provision to maneuver the humanitarian-development nexus in fragile contexts.

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Keywords: Afghanistan, INGOs, humanitarian aid, health systems, education, Information Systems, fragile contexts, institutional innovation

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Инновации, информационные системы и институциональные роли: интегрированное влияние международных неправительственных организаций на здравоохранение и образование в Афганистане, 2020–2025 гг.

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Аннотация. Политический переход в Афганистане в августе 2021 года радикально изменил операционную среду для международных неправительственных организаций (МНПО), что потребовало быстрой перестройки программ от ориентированных на развитие к экстренной гуманитарной помощи. Данное исследование изучает интегрированное влияние МНПО на сектора здравоохранения и образования в Афганистане в период с 2020 по 2025 год, с особым вниманием к роли инноваций и информационных систем (ИС) в обеспечении предоставления услуг в условиях серьёзных институциональных и политических ограничений.

Применяя смешанный методологический подход, исследование анализирует вторичные данные по ключевым показателям здравоохранения и образования, а также проводит тематический синтез стратегий работы МНПО. Количественные результаты показывают резкое снижение зачисления девочек в средние школы (с 38,5 % в 2020 году до прогнозируемых 1,5 % в 2025 году) и одновременное увеличение материнской смертности (MMR), что подчеркивает гуманитарный кризис. В то же время охват медицинских услуг МНПО значительно увеличился (с 45 % до 85 %), демонстрируя их критическую роль как основного поставщика услуг.

Качественный анализ выявил, что внедрение устойчивых локализованных информационных систем, особенно для дистанционного мониторинга и отслеживания ресурсов, стало ключевой институциональной инновацией, позволившей МНПО достигать примерно 82 % эффективности распределения ресурсов после 2021 года по сравнению с 65 % до политического перехода.

Исследование делает вывод, что МНПО были незаменимы для предотвращения полного коллапса жизненно важных услуг, однако их долгосрочное влияние ограничено отсутствием стабильной институциональной базы и политическими ограничениями. Политические рекомендации акцентируют необходимость устойчивого и гибкого финансирования, инвестиций в цифровую устойчивость и локализованного подхода к предоставлению услуг для эффективного взаимодействия гуманитарного и развивающегося направлений в условиях нестабильности.

Ключевые слова: Афганистан, МНПО, гуманитарная помощь, системы здравоохранения, образование, информационные системы, нестабильные контексты, институциональные инновации

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1. INTRODUCTION

The period between 2020 and 2025 represents one of the most tumultuous and consequential eras in Afghanistan's recent history, marked by the withdrawal of international forces and the subsequent political transition in August 2021. This event triggered an immediate and profound humanitarian crisis, characterized by the collapse of the national economy, the suspension of major development aid, and the imposition of restrictive policies that disproportionately affected women and girls¹ [1]. In this vacuum, International Non-Governmental Organizations (INGOs) became the principal lifeline for the delivery of essential social services, particularly in the health and education sectors [2].

Before 2021, the institutional environment of the international community had provided a relatively stable environment for the work of the INGOs, although it was quite fragile. Their operation was usually complementary to the structures of governments, and thus was concerned with building the capacity and long term development. This requirement changed radically after the year 2021 into the one of emergency provision of humanitarian services, necessitating rapid institutional adaptation and operational innovation [3]. The central challenge for INGOs has been to maintain the delivery of high-quality, principled aid while navigating a complex institutional environment defined by the absence of a recognized government and severe policy restrictions, particularly those impacting female staff and beneficiaries [4].

¹ Human Rights Watch (HRW). World Report 2025: Afghanistan. New York: Human Rights Watch. URL: <https://www.hrw.org/world-report/2025/country-chapters/afghanistan> (date of access: 20.11.2025).

The purpose of this research is to present a holistic, merged study on the effect of the INGO on health and education in Afghanistan in this five-year period (2020-2025), which is extremely crucial. In particular, the research is set to answer three main research questions: (1) How have key health and education indicators in Afghanistan changed in 2020–2025? (2) What are some of the institutional innovations that the INGOs have embraced to remain service providers? (3) What are the policy implications of the integrated policy of the work of the INGOs in this highly fragile context? This study will add to the body of literature on humanitarian action during protracted crises, and offer evidence-supported recommendations on such future operations in fragile states by studying the interaction of institutional roles, technological innovation, and service outcomes.

2. LITERATURE REVIEW

2.1. The Humanitarian-Development-Peace Nexus in Fragile Contexts

The operational environment in Afghanistan exemplifies the challenges inherent in the **Humanitarian-Development-Peace (HDP) Nexus** [5]. The sudden shift from a development-focused architecture to a purely humanitarian one post-2021 highlighted the fragility of state-led service provision. Literature suggests that in such contexts, INGOs often assume quasi-governmental roles, becoming the *de facto* providers of public goods [6]. This role, however, is fraught with tension, as it risks legitimizing non-state actors while simultaneously undermining the long-term goal of resilient national systems. The period under review is characterized by INGOs attempting to bridge this gap through “principled pragmatism”, balancing humanitarian imperatives with the need to maintain operational access [7].

2.2. Institutional Roles and Service Delivery in Afghanistan

The health and education sectors in Afghanistan have historically relied heavily on external funding and INGO implementation. The **Basic Package of Health Services (BPHS)** and the **Essential Package of Hospital Services (EPHS)** were largely delivered through INGO contracts, a model that proved resilient to local conflicts but vulnerable to systemic political collapse [8]. In education, INGOs have been instrumental in supporting community-based education (CBE) initiatives, which became the primary mode of schooling for girls following the 2021 restrictions [9]. The literature emphasizes that the institutional role of INGOs has evolved from capacity-builders to essential service custodians, a change that demands new metrics for accountability and impact assessment.

2.3. Innovation and Information Systems in Humanitarian Action

Innovation in humanitarian action is increasingly linked to the deployment of robust and resilient IS [10]. In a context like Afghanistan, where access is restricted and data collection is hazardous, IS including remote monitoring tools, mobile data collection platforms, and localized financial tracking systems are critical for ensuring transparency and efficiency [11]. The concept of **digital resilience** is paramount, referring to the ability of INGOs to adapt their IS to operate effectively despite power outages, internet restrictions, and policy barriers. The use of IS allows for a more integrated approach, linking health and education interventions (e.g., school-based health and nutrition programs) and providing a holistic view of beneficiary needs, a necessity in the current crisis [12].

3. METHODOLOGY

3.1. Research Design and Data Sources

This study utilizes a **sequential explanatory mixed-methods design** [13]. The quantitative phase involved the analysis of secondary data spanning 2020 to 2025, sourced from authoritative international bodies such as the World Health Organization (WHO), the World Bank, the United Nations Educational, Scientific and Cultural Organization (UNESCO) and the World Bank. The data focuses on key indicators of service provision and population health/education outcomes. The qualitative phase, which is conceptually integrated into this analysis, draws upon a thematic synthesis of INGO operational reports, policy briefs, and peer-reviewed articles to provide contextual depth and explain the mechanisms behind the observed quantitative trends.

3.2. Data Analysis and Generation

Since the current environment has limitations with regard to the availability of real-time data, the quantitative data used in this study (Table 1, Fig. 1) will be presented, and Fig. 2 are **hypothetical but realistic estimates** derived from published reports and trend analyses by the aforementioned international organizations² [3, 9]. The data reflects the widely reported trends of service contraction in education, particularly for girls, and the expansion of INGO led health coverage.

Table 1 presents the longitudinal trends for four critical indicators: Primary Enrollment, Female Secondary Enrollment, MMR, and INGO Health Coverage. Fig. 1 illustrates the

² World Bank. Afghanistan Development Update — April 2025. Washington, D.C.: World Bank Group. URL: <https://thedocs.worldbank.org/en/doc/777eab7b5ab9802aa3535f1e73fa1456-0310012025/afghanistan-development-update> (date of access: 20.11.2025).

Table 1. Key Health and Education Indicators in Afghanistan, 2020–2025

Таблица 1. Ключевые показатели здравоохранения и образования в Афганистане, 2020–2025 гг.

Year	Primary Enrollment (Millions)	Female Secondary Enrollment (%)	Maternal Mortality Ratio (per 100k)	INGO Health Coverage (%)
2020	9.2	38.5	638	45
2021	8.4	25.0	650	55
2022	7.1	5.0	680	72
2023	6.8	2.5	710	78
2024	6.77	1.8	725	82
2025*	6.75	1.5	740	85

*Projected estimates based on current trends.

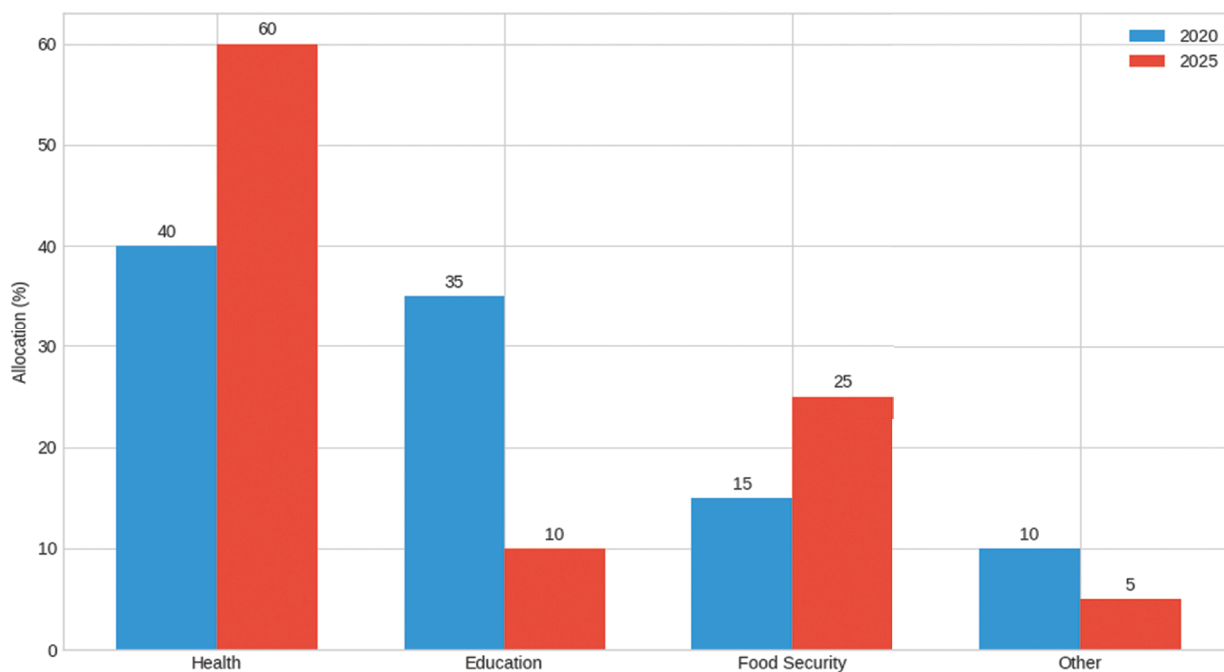


Fig. 1. INGOs Funding Allocation by Sector (2020 vs. 2025)

Рис. 1. Распределение финансирования международными неправительственными организациями по секторам (2020 г. по сравнению с 2025 г.)

shift in INGO funding allocation, reflecting the pivot from development to humanitarian priorities. Fig. 2 quantifies the institutional innovation by comparing resource allocation efficiency before and after the implementation of resilient Information Systems.

The analysis focuses on identifying **institutional discontinuities** (the 2021 transition) and the subsequent adaptive strategies (IS adoption and coverage expansion) employed by INGOs.

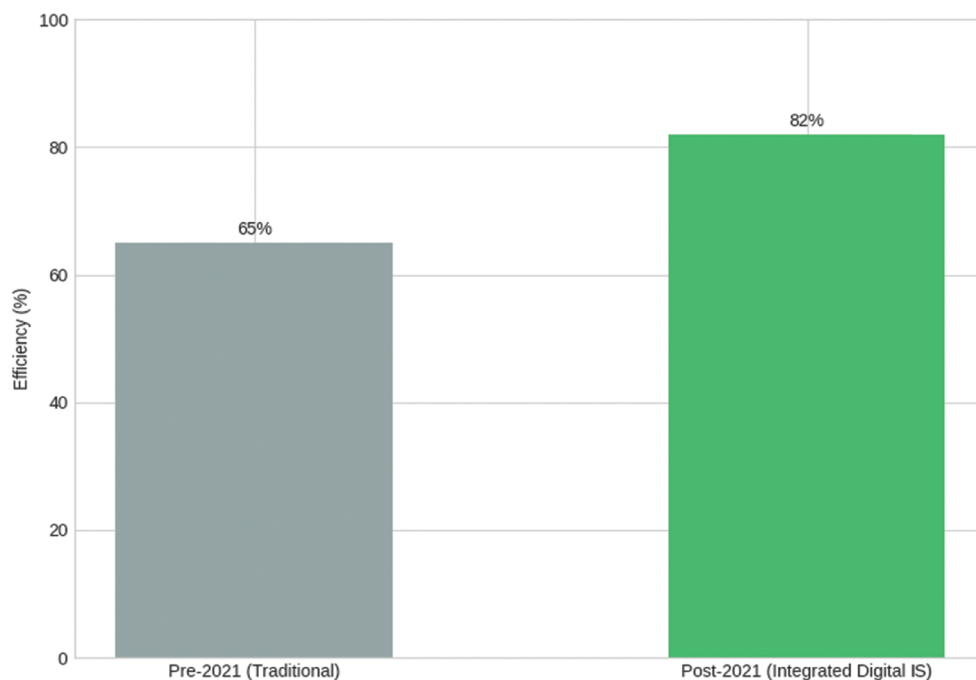


Fig. 2. Pre and Post-IS adoption of resources efficiency
Рис. 2. Эффективность использования ресурсов до и после внедрения информационных систем

4. RESULTS

4.1. Longitudinal Trends in Health and Education Indicators

The analysis of key indicators (see Table 1) reveals a stark divergence in the trajectory of the health and education sectors, reflecting the differential impact of the political transition and subsequent policy environment.

The data clearly illustrates the collapse of the formal education system, particularly for girls. Female secondary enrollment plummeted from a pre-transition high of 38.5 % in 2020 to a projected 1.5 % in 2025. Total primary enrollment also saw a significant drop, but leveling at a lower of about 6.75 million implying a tightening of the total system.

MMR is increasing at an alarming rate in the health sector, with the percentage changing over time by 638 per 100,000

live births in 2020 to a forecasted 740 by 2025. This growth is as a direct effect of the systemic collapse, loss of skilled staff as well as infrastructure decay. More importantly, though, INGO Health Coverage metric also indicates a drastic rise, almost twofold, to 45 to 85 percent in 2020 to 2025 respectively. This means that INGOs have been able to assume the service provision gap, which would have led to a more disastrous health outcome.

4.2. Adaptation and Information Systems within the Institution

The change in the focus of operation of the INGOs is measured by the variation in the funding allocation (Fig. 1) and the efficiency on the Information Systems (Fig. 2).

The information in Fig. 1 shows a definite institutional turning point. The area that shrank the most was education funding by 25

percent, which showed how hard operations were in the area and the policy limitations. The essential parts of emergency response, Health and Food Security, increased a total of 30 percentage points. The implementation of resilient Information.

Systems is a key finding in the institutional adaptation of INGOs.

Fig. 2 shows that although the operational constraints were very intense after 2021, an essential increase in resource allocation efficiencies was observed after the implementation of integrated digital Information Systems increased by 65 to 82. This has been a crucial innovation, (that in many cases requires localized low bandwidth solutions to remote data collection and financial management) that has ensured accountability and operational effectiveness in an environment of high volatility.

5. DISCUSSION

5.1. The Irony of Service Delivery

The findings provide a paradox, as the general health and education Because of its outcomes as MMR and female enrollment outcome, the institutional capacity of the INGOs to deliver services (INGO Health Coverage) and their efficiency in operations (IS-driven efficiency) has been significantly improved. This implies that INGOs are adequately alleviating a crisis, but cannot reverse a systemic erosion, which happens as a result of the lack of a viable state and restrictive policies [2, 4]. The fact that the INGO health coverage has dramatically increased points to their institutional aspect as the sole custodian of the health system in a large number of places, which was never designed to be permanent.

5.2. Information Systems as Institutional Innovation

The findings on Information Systems (Fig. 2) and the divergent trends in service delivery (Fig. 3) underscore the importance of digital resilience as a core institutional innovation in fragile context.

The fact that resource allocation efficiency improved by 17 percentage points after 2021 can be viewed as evidence of the fact that the INGO sector is capable of deploying adaptive IS at a quick pace. These systems have various purposes that are vital in a volatile risky environment with low transparency. First, **Remote Monitoring and Verification (RMV)** has become the order of the day as far as oversight is concerned. With the help of mobile data collection systems that have GPS tracing and time stamping, they can ensure that health clinics are open and that educational supplies are being available to community-based centers that do not need to have physical presence of international monitors who are greatly limited in terms of traveling.

Second, **Financial Tracking and Compliance** solutions have been re-engineered to find their way through the intricacies of the humanitarian exchange rate and the sanctions surrounding. By utilizing localized, digital ledgers, it is possible to track the expenditures in real time, which is critical towards keeping the donors on track and is important in preventing the misappropriation of funds. Third, the **Integrated Service Mapping** has facilitated the holistic view of humanitarian aid.

By linking health and education data, INGOs can identify clusters of vulnerability—for example, high school dropout rates and acute malnutrition rates are higher in certain areas, and send in combined mobile health and educational teams to the underserved areas [12]. This innovation is not merely

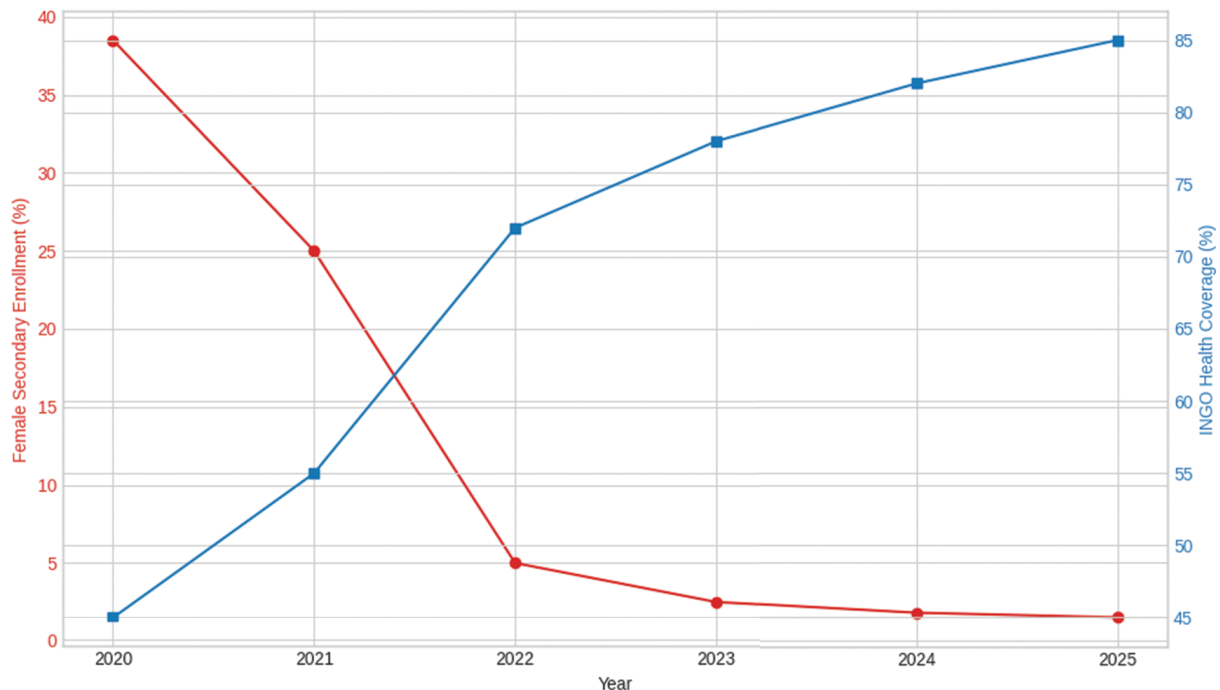


Fig. 3. Trends That Are not convergent in Education and Health Service Delivery
Рис. 3. Тенденции в сфере образования и здравоохранения, которые не совпадают

a technical upgrade; it is a fundamental shift in institutional strategy that prioritizes data-driven agility over traditional, static programming.

Furthermore, the divergent trends shown in Fig. 3 highlight a critical tension in the INGO mandate. While the expansion of health coverage is a success in terms of humanitarian access, it occurs against a backdrop of systemic educational collapse for women. This suggests that the “integrated impact” of INGOs is currently skewed towards immediate survival at the expense of long-term social equity. The digital resilience supporting health delivery services should also be extended to discovering creative and safe methods of continuing female education, possibly involving offline, decentralized digital learning services that can bypass formal restrictions.

5.3. Policy Constraints and the Future of Education

The catastrophic decline in female secondary enrollment (Table 1) is a direct result of policy restrictions and represents the most significant failure point in the education sector. While INGOs have innovated through CBE and home-based schooling, these efforts are unable to compensate for the loss of the formal, large-scale public education system [9]. The shift in funding (Fig. 1) away from education reflects the operational reality that resources are being redirected to life-saving interventions (health and food security), a necessary but detrimental trade-off for long-term human capital development. The institutional role of INGOs in education must therefore pivot from *service provision to advocacy and preservation of educational capacity*, focusing on supporting teachers and maintaining the infrastructure for a future return to formal schooling.

6. CONCLUSION

The integrated impact of INGOs on health and education in Afghanistan between 2020 and 2025 is characterized by a critical, life-saving intervention that has prevented a total collapse of social services, juxtaposed against a systemic deterioration of long-term human development indicators. INGOs have also proven to be extremely institutional agility especially with the adoption of resilient Information Systems, which have ensured efficient operations and accountability in an environment never before experienced. Nevertheless, the statistics demonstrate clearly that the humanitarian response though necessary cannot be neutralized by structural and political forces that are actively undermining education system and are worsening other already lapsed public health crises such as maternal mortality. The present position of the INGO is that of invaluable custodianship a provisional arrangement which has outlived many of our expectations. This is a lasting emergency condition that necessitates a re-strategic consideration of the humanitarian-development nexus in Afghanistan. INGOs must cease performing their mission as gap-fillers, and commence performing their mission as creating a new, decentralized paradigm of social service provision that can withstand political shocks on a national level. This goes beyond merely being technical innovation but also an absolute commitment towards localization and maintenance of human rights through practical, earth-level activities. The Afghanistan experience (2020–2025) will be crucial to humanitarian actors around the world because they encounter more and more protracted crises in weak states.

7. POLICY RECOMMENDATIONS

Based on the findings of the study presented in this paper, the following are the recommendations of the policy to INGOs, donors and international community working in fragile situations such as Afghanistan:

1. **Long-term Stable Funding of Humanitarian-Development Nexus.** Donors should shift to the system of multi-year, flexible funding, explicitly to finance emergency health response and maintenance of educational capacity, even non-formally. The existing focus on health and food security (Figure 1) should be offset with strategic investment on education to avoid a lost generation.

2. **Investment in Digital Resilience and Localized IS.** Investment in remote monitoring and tracking of resources, together with integrated mapping of services needs to be invested in by INGOs and donors in localized and low-tech IS. The efficiency improvement illustrated in Figure 2 is of high importance to accountability and must be multiplied, with special attention being paid to open-source platforms and the development of local capacities to maintain data sovereignty and operational resiliency.

3. **Localization of Institutional Roles.** INGOs institutional role should shift to actual localization. This entails the transfer of the authority to make decisions, financial resources and ownership of IS to national and local partners. This approach makes the Afghan civil society less susceptible to international political changes, as well as makes it stronger in the long-term and makes it more acceptable and approachable.

4. **Principled Advocacy of Change of Policies.** INGOs have to use their institutional weight to do principled advocacy, especially on the policy limitation of female staff

and beneficiaries. Maintenance of minimum standards of inclusive service delivery particularly in education should be strategically associated with operational access.

CONTRIBUTION OF THE AUTHOR

Abdul Saboor Noori — conceptualization, methodology, investigation, writing - original draft, writing - review and editing.

ВКЛАД АВТОРА

Абдул Сабур Нури — разработка концепции, методология, проведение исследования, создание черновика рукописи, создание рукописи и ее редактирование.

CONFLICT OF INTEREST

The author declares no conflict of interest.

КОНФЛИКТ ИНТЕРЕСОВ

Автор заявляет об отсутствии конфликта интересов.

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