CAUSAL DESIGN

Left Behind: The Funding Gap for Young Children in Crisis.

Funding for Early Childhood Development in Emergencies (final)

MOVING MINDS ALLIANCE

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Prepared for:

Causal Design partners with international development clients to provide rigorous independent program evaluation, expand cultures of evidence within organizations, and join them in efforts to relieve human suffering and end poverty.

3280 Wadsworth Blvd
Wheat Ridge, CO 80033, USA
Tel: +1 (720) 260 4837
Email: Info@CausalDesign.com

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ACRONYMS

CBPF	Country-based Pooled Fund
CERF	Central Emergency Response Fund
CRS	Creditor Reporting System
DAC	Development Assistance Committee
ECD	Early Childhood Development
ECDiE	Early Childhood Development in Emergencies
FTS	Financial Tracking Service
HPC	Humanitarian Programme Cycle
HRP	Humanitarian Response Plan
IATI	International Aid Transparency Initiative
IDP	Internally Displaced Persons
IRC	International Rescue Committee
KII	Key Informant Interview
LLM	Large Language Models
ML	Machine Learning
MMA	Moving Minds Alliance
NCF	Nurturing Care Framework
NLP	Natural Language Processing
OA	Official Aid
ODA	Official Development Assistance
OECD	Organisation for Economic Co-operation and Development
RRP	Refugee Response Plan
TF-IDF	Term Frequency-Inverse Document Frequency
UNOCHA	United Nations Office for the Coordination of Humanitarian Affairs
WHO	World Health Organization

EXECUTIVE SUMMARY

This report provides the most comprehensive analysis to date of international aid flows supporting Early Childhood Development in Emergencies (ECDiE). Commissioned by the Moving Minds Alliance (MMA) and implemented by the International Rescue Committee (IRC) and Causal Design, the study updates MMA's 2020 baseline and introduces an innovative methodology relying on advanced natural language processing and large language models to process and understand over 800,000 project descriptions from the OECD Creditor Reporting System (CRS) and UN OCHA Financial Tracking Service (FTS), the research identifies and categorizes ECD-related investments across humanitarian and development funding streams.

Overall Findings

Between 2018 and 2023, an average of **3.8 percent of total aid to crisis-affected countries** supported early childhood development services—equivalent to **4.9 percent of humanitarian assistance** and **3.7 percent of development assistance in countries with crisis**. While ECDiE funding nearly doubled from 2018 to 2019, it plateaued after 2021 and declined by an average of 6.5 percent annually thereafter.

During this period, bilateral donors consistently formed the foundation of ECDiE financing, contributing roughly two-thirds of total resources, followed by multilateral and pooled funds. The **United States, Germany, and Japan** were the largest individual donors, while **the World Bank's International Development Association** was the largest multilateral source. Private and philanthropic donors, including the Gates, Hilton, and LEGO Foundations, allocated higher proportions of their portfolios to ECDiE than traditional donors but remain limited in scale.

Funding was concentrated in a few high-need contexts, led by **the Democratic Republic of the Congo, Bangladesh, Nigeria, Syria, and Tanzania**, which together accounted for roughly one-quarter of total ECDiE aid.

Sectoral Imbalance

Funding remains heavily weighted toward **health and nutrition, which together represent over three-quarters of ECDiE assistance** across both humanitarian and development channels. By contrast, "thrive" components, those that mean having responsive care, stimulation, and opportunities to learn that enable them to reach their full developmental potential, receive less than 20 percent combined. **Thrive components are the least likely to be covered by domestic budgets and thus most dependent on external support**. As experts emphasized, these gaps risk leaving young children without the psychosocial and developmental support necessary for recovery and resilience in crisis contexts.

Shrinking Resources, Rising Needs

The period from 2024 onward has marked a reversal in aid trends. Based on donor announcements and OECD projections, **official development assistance (ODA) is expected to decline by nearly 30 percent by 2027**, following cuts across multiple bilateral donors. If current ECDiE shares of this funding persist, this contraction would translate into approximately **$1.8 billion less in ECDiE funding** between 2026 and 2027 alone.

Even under optimistic scenarios, where ECDiE's share of aid increases modestly, total resources would still fall well short of need. Humanitarian appeals already meet less than half of requested funding, and over 400 million

children now live in or are displaced by conflict. Stakeholders from recipient countries noted that in this constrained environment, parenting programs, early learning, and psychosocial care are often the first to be deprioritized.

Considerations for the Way Forward

Interviews with donors, experts, and recipient governments highlight several strategic considerations to sustain and expand investment in ECDiE:

1. **Reframing ECDiE as Essential, Not Optional:** Positioning the all components of early childhood development (as outlined in the Nurturing Care Framework), including responsive caregiving and early learning, as integral to child survival and community resilience can help ensure these areas are maintained during fiscal contractions.

2. **Embedding ECDiE within Other Sectors:** Integration into health, nutrition, education, and protection programs can safeguard ECDiE activities from budget cuts and highlight their contribution to broader humanitarian and development goals.

3. **Broadening the Funding Base:** With bilateral ODA under strain, partnerships with philanthropies, development finance institutions, and private investors offer potential to pilot innovative financing models, particularly for “thrive” interventions.

4. **Strengthening National Ownership:** Embedding ECD within national strategies for health, education, and social protection can help governments attract and retain funding, while reducing vulnerability to external aid fluctuations.

5. **Linking Evidence and Storytelling:** Building a stronger evidence base on cost-effectiveness, coupled with human-centered narratives, can help donors see ECDiE as both a moral and strategic investment in resilience and recovery.

Conclusion

The findings reveal persistent underinvestment in young children affected by crises. Maintaining and expanding support for ECDiE will require coordinated action to reframe priorities, integrate across sectors, diversify financing, and build domestic political will. Protecting these early investments is a cost-effective means of safeguarding future human capital and social stability in fragile contexts.

1.0 INTRODUCTION

Causal Design[1] (referred to as the research team in this document) has been engaged by the International Rescue Committee (IRC) and the Moving Minds Alliance (MMA) to deliver a replicable methodology and updated analysis for ongoing monitoring of financial flows supporting Early Childhood Development in Emergencies (ECDiE). This Final Report summarizes the approach we took and the findings from the research.

1.1 Analysis Motivation

MMA commissioned this research to update its 2020 analysis of ECDiE funding flows (SEEK, 2020) and develop a replicable methodology for ongoing monitoring of financial flows supporting ECDiE.

The key objectives for the report are:

1.	**Historical funding flows:** Provide an updated analysis of humanitarian and, where possible, development financing flows supporting ECDiE, using the United Nations Office for the Coordination of Humanitarian Affairs' (UNOCHA) Financial Tracking Service (FTS), the Organisation for Economic Co-operation and Development's (OECD) Creditor Reporting System (CRS), and other relevant databases.
2.	**Forward-looking funding projections (financial analysis):** Quantify the likely reduction in global development and humanitarian funds available for ECDiE from bilateral and multilateral donors.

By addressing these objectives, we hope this research will help IRC/MMA advocate for increased investment in ECDiE, ensuring that financial flows align with the growing needs of young children in crisis settings. By clarifying historical and anticipated financial trends, MMA will gain a stronger ability to plan donor advocacy activities with precision.

2.0 SCOPE FOR THIS RESEARCH

Early childhood development (ECD) refers to the physical, social, emotional, and cognitive abilities a child acquires from pregnancy to age 8, though this analysis focuses on the critical window from conception to age 5. During these earliest years, children not only need support to *survive*, to stay alive, safe, healthy, and nourished, but also to *thrive.* Thriving means having responsive care, stimulation, and opportunities to learn that enable them to reach their full developmental potential.

The **Nurturing Care Framework (NCF)**, launched by WHO, UNICEF, and the World Bank, provides a roadmap for this dual imperative (WHO et al. 2018). It identifies the following five interrelated components, good health, adequate nutrition, safety and security, responsive caregiving, and opportunities for early learning, that together enable children to survive and thrive:

- **Good health** (ECD services might include maternal, newborn and child healthcare and hygiene, etc.)
- **Adequate nutrition** (ECD services might include exclusive breastfeeding, healthy eating, etc.)
- **Responsive caregiving** (ECD services might include coaching caregivers on child development and caregiver responsiveness, caregiver mental health support, etc.)

[1] www.causaldesign.com. Causal Design is a social enterprise with a vision of making evidence-based programming affordable for NGOs, practical to field workers, and digestible to policy makers and the general public.

- **Opportunities for early learning** (ECD services might include pre-school, childcare provision, learning through play, etc).
- **Security and safety** (ECD services might include birth registration, protection from violence, etc.)

This research is focused on ECD services to support early childhood development specifically in ECDiE, situations where an acute or prolonged breakdown in a community's ability to meet its own needs arises due to war, conflict, natural disasters, pandemics, or other critical threats to health, safety, and well-being. We have characterized an emergency setting as a country with a humanitarian response plan (HRP) or refugee response plan (RRP) during a given year.

3.0 METHODOLOGY

This section describes the data and simplified methodology used to furnish the findings in this report (an in-depth description of the methodology was provided in our inception report for this study).

3.1 Data Collection

Desk Review: The research team undertook a desk review to structure the research methodology and inform the assumption about future funding flows. All resources have been listed in the Works Cited in the Annex. This involved identifying publicly available data sources and existing reports/statements by donors and researchers, to confirm which data sources were most dependable, what gaps exist in current financial tracking systems, which stakeholders needed to be engaged for further data collection and information gathering, and what publicly available budgets reveal about likely future funding flows.

Development Assistance Funding Flows: OECD's CRS database tracks official development assistance (ODA) and official aid (OA) reported by the members of the OECD's Development Assistance Committee (DAC), multilateral organizations, and some private donors on a voluntary basis. The CRS is a centralized, donor-reported database from 33 members of the DAC and some non-DAC member countries, multilateral donors, and private donors. Our analysis of the CRS database covered the years 2018 through 2023, the latest year for which CRS data was publicly available. Each flow in the database provided information on the donor, recipient, purpose, and amount disbursed in US dollars. The CRS database also contains a short description of each aid activity, its official title (each 150 characters or less), and a longer description of the activity (sometimes providing additional detail beyond the short description).

Due to the critical role of these descriptions, the research team implemented a data preprocessing step to ensure the quality of its input. The research team excluded projects with a project description of fewer than five words. This decision was based on the observation that very short descriptions often lack sufficient semantic detail for effective Natural Language Processing (NLP) classification, leading to high model uncertainty.

The 2018-2023 CRS data presented some challenges: 11 percent of reported flows were missing a long description. The average length of the available long descriptions was 457 characters, while the median was 168 characters[2]. This variability in text length and the presence of missing data underscored the necessity of robust preprocessing steps and validated the research team's decision to exclude short descriptions to improve the reliability of its classification models.

[2] On average a word has 5-6 characters. This means that the average would correspond to roughly 70-80 words, and the median to 27-33 words.

Humanitarian Funding Flows: UNOCHA's FTS is a centralized database, updated in real-time to track global humanitarian flows. The database contains voluntarily reported data on all cash and in-kind humanitarian contributions globally. The research team's analysis of the FTS database covered the years 2018 through 2024. Each flow in the database included donor information, recipient information, paid amounts in US dollars (our analysis excluded committed flows), and the activity description. The FTS data spanning from 2018-2024 had an average description length of 109 characters, while the median was 81 characters.[3] Upon initial inspection of the data, there were several entries related to HRPs that provided very limited descriptions beyond indicating that the project provided funds for an HRP. The research team complemented the FTS data with other data sources to provide additional descriptions for projects with associated flows reported on the FTS (merging them using project identification numbers and reference codes), due to the importance of having rich project descriptions for this analysis. These complementary data sources included: longer project summaries that are stored in the Humanitarian Programme Cycle's (HPC) Project Module tool, the Central Emergency Response Fund (CERF) and Country-based Pooled Funds (CBPF) data hubs, and the International Aid Transparency Initiative (IATI) Registry.

Summary: What is in the data?

Humanitarian funding	Development funding
Included all **paid contributions** (i.e. excluded commitments and pledges) reported to the OCHA's FTS. **Excluded projects with descriptions of four words or shorter**, due to the difficulty in categorizing them as ECD-related or not.	Included **all ODA and private development finance net paid disbursements made to crisis-affected countries** (defined as a country with an emergency response plan) **plus any disbursements with a conflict-related keyword** in the description. Funding to crisis-affected countries may not target crisis-affected populations. **Only 10 percent of projects in crisis-affected countries had an emergency-related keyword.** Also included **all regional flows to the South of Sahara and Middle East regions**, where many countries were affected by crises. All other regional flows were excluded from the analysis. All **funds to Afghanistan were excluded** from the analysis, since they had no project descriptions with which to classify funds as ECD-related or not. Similarly, **projects with descriptions of 4 words or less were excluded**. **Funding reported to OECD's CRS as humanitarian aid was excluded**, to prevent double-counting with the funds reported to OCHA's FTS.

These data sources above do not include household spending or spending by recipient countries on early childhood development in crisis areas.

[3] Around 20 words for the average and 15 for the median.

3.2 Key Informant Interviews

As part of the study, the research team conducted key informant interviews (KIIs) to complement the quantitative analysis with expert perspectives and contextual insights. These interviews were originally planned to serve several distinct purposes:

- ➢ To gather perspectives from major donors and ECDiE experts on the anticipated future of ECDiE funding, particularly in light of recent reductions in foreign assistance.
- ➢ To solicit feedback on the strengths and limitations of existing methodologies used to track and categorize international aid flows to ECDiE and related sectors.
- ➢ To deepen the research team's understanding of the OECD CRS and the UN OCHA FTS databases, ensuring accurate interpretation and appropriate methodological use in the financial analysis.

After the inception phase, the research team and MMA jointly decided to also reach out to representatives from aid recipient governments, to capture insights on the impacts that shrinking aid budgets might have on funding for ECDiE in their countries. Additionally, the research team decided that interviews with experts on the financial databases used for analysis were no longer necessary, as the desk review provided a robust understanding of the aid databases. The research team conducted interviews with a total of eight informants across three categories of stakeholders (six informants were interviewed virtually and two provided written answers to questions):

Table 1: List of Key Informants

Stakeholder Type	Respondents	Discussion topics
Large ECD Donors (4)	Representatives from major multilateral and philanthropic donors	Future ECDiE funding priorities, donor behavior under constrained budgets, perceived role of ECDiE in humanitarian and development portfolios
ECDiE Experts (2)	Experts on ECD in emergencies	Future ECDiE funding priorities, donor behavior under constrained budgets, perceived role of ECDiE in humanitarian and development portfolios
Recipient Governments (2)	Representatives from government agencies from foreign aid recipient countries	Recipient country behavior under constrained budgets, perceived priority of ECDiE compared to other humanitarian and development needs

The research team conducted the interviews in a semi-structured manner: the use of a flexible guide (provided in the Annex), allowed for probing and follow-up questions as new themes emerged.

3.3 Advisory Group

We are grateful to the advisory group of five experts from IRC and external organizations, whose insights and guidance were invaluable to this study. This advisory group comprised individuals with deep knowledge of ECD commitments, funding flows, and their historical evolution. They supported us by offering technical input on data sources and methods, reviewing early findings, and advising on the interpretation of results and policy implications.

Their contributions helped ensure that the research was rigorous, relevant, and useful to the broader ECDiE community.

3.4 Historical Trends Analysis

Accurately tracking and reporting on funding for ECDiE remains a complex task due to the absence of standardized classifications for early childhood interventions across donors and reporting agencies. In many cases, project descriptions lack sufficient detail to allow for precise categorization. ECDiE interventions typically cut across multiple sectors, including health, nutrition, early learning, protection, and responsive caregiving, and often do not align neatly with traditional aid classifications. As a result, identifying and quantifying ECDiE funding within large global aid databases presents significant methodological challenges.

Previous efforts to quantify investments in development and humanitarian sectors, including ECD, have often relied on keyword-based search methodologies applied to large aid databases. Notable examples include the SEEK (2020) report and the broader body of work by Arregoces et al. (2019) and the Countdown to 2015 and Countdown to 2030 initiatives (Arregoces et al. 2015). These studies typically use expert knowledge to define a set of keywords linked to specific intervention types, then extract funding data by identifying projects whose descriptions contain those terms. For example, SEEK (2020) identified approximately 309 ECDiE-related projects in the UNOCHA FTS database for 2018, out of an estimated total of 15,000 projects recorded that year.

Even though those studies provided initial insights and established relevant baselines, these keyword-based approaches, by their very nature, face several limitations:

- **Reliance on Explicit Terminology:** These methodologies miss projects that do not use specific ECD jargon, overlooking those that implicitly benefit young children or use nuanced language. This can lead to an underestimation of total funding.
- **Difficulty with Cross-Sectoral and Integrated Interventions:** ECDiE interventions are inherently multi-sectoral. A project focused on "water, sanitation, and hygiene (WASH)" might significantly contribute to a child's safety and healthy development, but without explicit ECD keywords, it may not be captured.
- **Inability to Capture Imprecise Components:** Concepts like "responsive caregiving" and "child protection" are often difficult to trace with keyword searches because they may be embedded within broader project descriptions that lack a specific term.
- **Imbalanced Dataset and Risk of Over-Counting:** Given that ECDiE projects represent a small fraction of total aid projects, a simple keyword approach risks over-counting projects that are not truly relevant, leading to inaccurate results.

Our research introduces an important shift from keyword matching to an understanding of contextual meaning. Our approach leverages cutting-edge NLP and Machine Learning (ML) techniques to learn the underlying semantic patterns within project descriptions. This allows our approach to infer relevance even when explicit keywords are absent; for example, a project describing "safe play areas for children affected by conflict" is equally relevant to ECDiE as one explicitly mentioning "early learning," despite different terminology. This deeper, contextual understanding is the core innovation enabling us to overcome historical limitations and achieve a far more comprehensive and accurate mapping of ECDiE investments.

BRIEF OVERVIEW OF THE METHODOLOGY

The following section provides a summary of the methodology used for the historical analysis and classification of projects. A more in-depth and detailed description of this approach can be found in the project's inception report.

The research team's methodology employed NLP to understand the semantic meaning and context of project descriptions, moving beyond simple keyword searches. We used advanced text representation methods that captured the inherent relationships between words, which allowed us to identify nuanced interventions and address inconsistent terminology in the datasets. ML algorithms were then trained on diverse examples to identify complex patterns within these textual features. This capability was particularly relevant for classifying cross-sectoral projects, and for capturing components like responsive caregiving and child protection that were often described implicitly.

We also integrated large language models (LLMs) into our process. LLMs were used to help classify a subset of projects for the training data, providing an initial set of high-quality labels. Later, the LLMs also assisted the research team by reviewing projects classified by the machine learning algorithm, helping to validate and refine the final output.

Recognizing the nuanced and evolving nature of ECDiE, an essential layer of human oversight was integrated. The research team, guided by inputs from the advisory group, reviewed and refined the LLM-generated and ML-classified labels. This collaborative method leveraged the speed and power of artificial intelligence with the indispensable accuracy and contextual judgment of human experts, ensuring both efficiency and the highest quality of labeling.

Our classification framework is rooted in the NCF. The study classified projects into the five core NCF domains, and an explicit "Non-ECDiE" category. Distinguishing between these specific categories moved beyond a simple binary classification to reveal where investments were being made across the multifaceted landscape of child development in emergencies. By aligning with the NCF, our findings can directly inform and strengthen efforts to support young children and their caregivers globally.

The methodology was applied independently to each dataset (UNOCHA FTS and OECD CRS). This approach was crucial because while both databases track aid flows, they measure distinct funding flows (humanitarian vs. development), often contain different types of project descriptions, and use varying reporting standards. Applying the methodology separately allowed us to account for these distinctions, develop tailored classification models for each context, and ultimately provide a more accurate and context-specific understanding of ECDiE funding across the full spectrum of international assistance.

Our methodology was structured into four distinct and iterative phases, designed to provide a robust, quantifiable, and highly interpretable mapping of international aid to ECDiE. The following sections provide more details on each one of the following phases, while the inception report contains a more in-depth description of each phase

- **Phase 1 - Rule-Based Classification:**
  Automated generation of high-precision initial labels.
- **Phase 2 - Feature Engineering:**
  Transforming raw text into numerical data for machine learning
- **Phase 3 - Iterative Refinement & Model Training:**
  Core machine learning model development with strategic LLM assistance and targeted human labeling
- **Phase 4 - Full Dataset Classification & Post-Analysis:**
  Deployment of the final model and comprehensive data validation

Phase 1: Rule-Based Classification. Automated generation of high-precision initial labels.

Phase 1 of the methodology focused on creating a substantial initial set of high-precision, pre-labeled projects to serve as foundational training data for the subsequent machine learning model. This phase leveraged a rule-based classification approach, which is similar to the keyword-based methods used in prior studies on tracking aid funding. The primary goal was to provide a large volume of "cost-free" labels that were highly likely to be correct, even if incomplete.

The process began by defining a set of high-precision rules for each of the five core NCF categories: Good Health, Adequate Nutrition, Early Learning, Responsive Caregiving, and Security and Safety. These rules were based on specific keywords and phrases that were highly indicative of a project's category. For each category, the research team created two sets of keywords: one with terms more likely to be related to ECDiE (e.g., 'early childhood development'), and a second with more general keywords requiring further exploration. The presence of age-related terms (e.g., 'children under 5', 'infants') was also explored to further refine the classification. In addition to employing keywords, in the case of the OECD CRS dataset, the research team also leveraged the existence of purpose codes and the fact that previous methodologies have specified which purpose codes are more likely to be associated with early childhood development.

To address the potential for false positives—a known limitation of relying solely on keyword matching—the research team implemented a review process. Projects were manually reviewed for classification into each category using the keyword sets and age-related terms. To further assist with this manual review, the team employed an LLM, specifically Gemini 2.5 flash-lite. The LLM assigned a score from 0 to 1 for each category and a separate 0-1 score indicating the project's relevance to children aged 0-5 years. It also provided a justification for its classification, which helped guide the team's manual review. This collaborative process leveraged the speed of the LLM with the indispensable contextual judgment of human experts, ensuring a high quality of labels for the training data.

Before applying these rules, a series of text preprocessing steps were performed on all project descriptions and keywords, which involved converting text to lowercase and performing lemmatization. Python and R scripts were used to scan project descriptions from the UNOCHA FTS (2018-2024) and OECD CRS (2018-2023) databases. The process described before created a "Rule-Based Labeled Pool" of both positive and negative examples for training for each category[4]. This combined pool of rule-based positive ECDiE examples and sampled "Non-ECDiE" projects was then split into three distinct sets for machine learning model development. The majority (75 percent) was designated as the Rule-Based Training Set to teach the model. A smaller portion (12.5 percent) served as the Rule-Based Validation Set for fine-tuning the model and preventing overfitting. The remaining 12.5 percent was held as the Rule-Based Test Set, used only at the very end to provide an unbiased estimate of the model's final performance. The majority of projects that did not receive a label in this phase constituted the "Unlabeled Pool" to be classified later by the final model.

Phase 2: Feature Engineering. Transforming raw text into numerical data for machine learning

The objective of Phase 2 was to convert raw project descriptions from the UNOCHA FTS and OECD CRS databases into a numerical format that machine learning algorithms can process. Computers need numerical representations to identify patterns and make classifications since they cannot read raw text. This phase was

[4] A machine learning model was run independently for each category . Because of this, it was not necessary for each project in the Rule-Based Labeled Pool to be assigned to be classified as pertaining or not to each one of the five categories.

critical because the quality of these numerical features directly impacts the machine learning model's ability to accurately understand the nuances of ECDiE interventions.

The process began with a comprehensive text preprocessing, which involved a series of cleaning and standardization steps. These steps included: lowercasing, tokenization, stop word removal, and lemmatization.

Once the text was preprocessed, the next step was to transform the cleaned text into numerical data through feature vectorization. The research team selected the Term Frequency-Inverse Document Frequency (TF-IDF) with N-grams approach for this purpose. TF-IDF quantifies how important a word or combination of words (N-grams) is to a specific document within a larger collection. It assigns higher scores to terms that are frequent in one project description but are relatively rare across the entire database, thus highlighting the terms most characteristic of that project. For example, a phrase like "nutrition support" would receive a high TF-IDF score because, while frequent in relevant documents, it does not appear often across the entire dataset. This ability to highlight uniquely relevant terms was a very important feature of TF-IDF for classifying documents.

The research team chose TF-IDF with N-grams because it is highly effective at capturing the local semantics and explicit linguistic markers of ECDiE interventions prevalent in short project descriptions. The method's high interpretability allows experts to directly understand which specific phrases and terms are driving the classifications. TF-IDF is also a computationally efficient method, which is particularly useful when classifying tens of thousands of project descriptions. This approach provided a strong, interpretable baseline and avoided unnecessary computational complexity, which aligns with the goal of creating a transparent and accessible methodology that could be internally applied and maintained.

Phase 3: Iterative Refinement & Model Training: Core machine learning model development with strategic LLM assistance and targeted human labeling

Phase 3 was the core of the machine learning classification process, where the model learned to accurately identify and categorize ECDiE interventions. The primary objective was to train and iteratively refine a robust machine learning model that could classify all projects in the UNOCHA FTS and OECD CRS databases with high accuracy by combining automated labeling with human inputs.

The process began by training the first machine learning model using the Rule-Based Training Set created in Phase 1. This model, a Logistic Regression algorithm, learned to recognize patterns and relationships between the numerical features of project descriptions (from Phase 2) and their corresponding ECDiE labels. Logistic Regression was chosen for its interpretability, computational efficiency, and proven effectiveness with sparse text data. The algorithm learned by iteratively adjusting the "weights" of words and N-grams that were indicative of a specific category. For a given project, it would multiply each word's TF-IDF score by its learned weight, sum the scores, and use a logistic function to transform this into a probability between 0 and 1. If the probability exceeded a predefined threshold (e.g., 0.50), the project was assigned to that category.

For two of the categories, namely "Responsive Care" and "Security and Safety", it was more challenging to find positive training examples. To address this challenge the research team employed a more robust validation approach using Stratified K-Folds. Instead of a single, small validation set, the training data was split into K folds, with each fold acting as a mini-validation set. The "stratified" element ensured that each fold maintained the same positive-to-negative ratio as the original dataset. Within each training portion of a fold, oversampling was applied to balance the classes. This process prevented data leakage and provided a more stable and reliable performance estimate than a single holdout set. The Logistic Regression model was trained on the oversampled training folds and evaluated on the corresponding validation folds, with metrics like Precision, Recall, and F1-score averaged across all folds to assess performance.

To improve the model's ability to classify projects beyond the explicit rules from Phase 1, an iterative refinement process was implemented using a tiered approach based on the model's confidence scores.

- **High-Confidence ML Labels**: Projects with a very high confidence score (e.g., a probability of 0.90 or greater) were automatically added to the training data to efficiently scale the dataset. A small, random subset was manually reviewed to check for "confidently wrong" predictions.
- **Uncertain ML Labels**: Projects with low confidence scores (e.g., probabilities between 0.10 and 0.90) were identified as "uncertain" and sent to the LLM, specifically **Gemini 2.5 Flash-Lite**, for an initial classification.
- **Human/Manual Review**: A subset of projects that the LLM classified with low confidence were selected for manual review.

This new set of labeled projects—including high-confidence predictions from both the ML model and the LLM, as well as manually classified projects—was then added to the training set. The machine learning model was subsequently retrained on this expanded and higher-quality dataset, with its performance re-evaluated on the validation set to track improvements. This iterative process allowed the ML model to progressively enhance its understanding of complex patterns, leading to more accurate classifications, especially for ambiguous cases.

Finally, to provide an unbiased assessment of the model's performance, it was run one last time on the Rule-Based Test Set, which was held separate from all training and validation activities. The performance metrics obtained from this final evaluation represented a reliable, unbiased estimate of the model's accuracy.

Phase 4: Full Dataset Classification & Post-Analysis: Deployment of the final model and comprehensive data validation.

Phase 4 involved deploying the final, optimized machine learning model to classify the entire dataset and performing comprehensive post-analysis to validate the results. The primary step in this phase was to apply the model, developed and validated in Phase 3, to all project descriptions that were not included in the final training, validation, or test sets. This encompassed the majority of the initial unlabeled projects from Phase 1. For each project, the model would:

- Assign one or more of the five NCF categories (Good Health, Adequate Nutrition, Early Learning, Responsive Caregiving, or Security and Safety).
- Explicitly assign a "Non-ECDiE" label if a project did not fit any of the ECDiE categories.
- Provide a probability score for each assigned category to indicate the model's confidence in its classification.

This process was executed independently for both the UNOCHA FTS and OECD CRS datasets to account for their distinct characteristics as humanitarian and development aid contexts.

Even after rigorous training, a final layer of quality assurance was included to build confidence in the large-scale classification results. This audit consisted of two main tasks:

- **LLM-Enhanced Verification**: A small, random sample of projects was drawn from each of the classified categories. These samples were then sent to the LLM (specifically, Gemini 2.5 Flash-Lite) for independent verification. This step leveraged the LLM's advanced contextual understanding as a secondary check on the primary model's performance.
- **Human Review of Discrepancies**: The research team manually reviewed any cases where the LLM's classification disagreed with the primary machine learning model's classification. This targeted review

helped to pinpoint specific challenges for the model and ensured the final output maintained a high standard of accuracy and reliability.

3.5 Forward-Looking Funding Projections

To assess the possible trajectory of funding for ECDiE, we developed a structured estimation approach that built on recent historical patterns, macro-level funding trends, and qualitative insights from stakeholders and strategic policy documents. The aim was not to generate precise predictions, but rather to illustrate a plausible range of funding outcomes for ECDiE between 2025 and 2030, based on available evidence and donor behavior to date.

We began by analyzing historical allocations to ECDiE as a share of overall development and humanitarian funding. These shares served as the basis for constructing a baseline estimate. For this baseline, we held the average historical share of ECDiE funding constant as a proportion of total ODA and humanitarian assistance and applied it to projected global funding volumes for ODA and humanitarian aid from 2025 to 2030. Projections for overall ODA and humanitarian aid were drawn from international institutions, including the OECD's 2025 report *Cuts in Official Development Assistance: OECD Projections for 2025 and the Near Term* (OECD 2025), which reflects macroeconomic conditions, donor publicly available priorities as well as their opinions in a private survey, and geopolitical constraints.

This process generated a baseline estimate of absolute ECDiE funding levels under the assumption that historical prioritization patterns remain stable. It also allowed us to isolate the effect of expected overall aid declines on ECDiE funding.

To illustrate a range of possible outcomes, we then constructed two alternative scenarios. An "optimistic" scenario assumed that ECDiE could gain relative prioritization due to heightened awareness of its cost-effectiveness and long-term benefits. A "pessimistic" scenario assumed that ECDiE would lose priority in favor of immediate life-saving interventions in the context of shrinking donor budgets. These scenarios were informed primarily by expert interviews with donors, implementers, and advocates, as well as a review of donor strategy documents and funding plans and modeling to predict the possible future funding flows.

3.6 Limitations of This Study

While our methodology represents a significant advancement in accurately classifying ECDiE funding, it is important to acknowledge the inherent limitations of this approach. We have classified these limitations into three categories: data-related limitations, methodological limitations, and scope-related limitations.

Data-Related Limitations

- **Inherent Data Quality and Completeness:** Our approach relied entirely on the quality and completeness of project descriptions within the UNOCHA FTS and OECD CRS databases. These databases collect information on a voluntary basis, and reporting practices can vary significantly across organizations and over time. Brief, generic, or poorly detailed project descriptions inevitably limits the precision of any classification methodology, regardless of its sophistication. While our model can infer meaning from nuanced language, it cannot extract information that is simply not present in the text. To mitigate the impact of incomplete descriptions, we excluded descriptions of four words or less from our analysis.
- **Inconsistent Terminology Evolution:** Although our methodology was designed to be robust to varying and evolving terminology, language constantly shifts. New jargon, acronyms, or programmatic concepts may emerge in the future. While our iterative refinement process, expert input, and LLM assistance

mitigated this, continuous adaptation was required for the model to maintain peak performance over long time horizons.

- **Contextual Ambiguity in Short Descriptions:** Despite our model's ability to understand context, short project descriptions (averaging ~30 words) inherently offer less contextual information than longer reports. This conciseness can lead to residual ambiguity, where a term might genuinely apply to both ECDiE and non-ECDiE contexts without enough surrounding words to definitively disambiguate.

- **Potential Inconsistency in Private Donors' Financial Reporting:** It is unclear whether organizations that have voluntarily reported some funding flows to the databases do so on a consistent basis, so it is possible that the funds captured by the databases do not reflect their entire humanitarian and development contributions. This concern is more relevant to private funders and NGOs, since they report to these databases on a voluntary basis.

Methodological Limitations

- **Classification of Development Funding in Crisis-affected Countries:** The analysis defines development funding in emergencies as development funding to crisis-affected countries (i.e. countries with an emergency response plan in a given year). A key limitation of this methodological choice is that funding to crisis-affected countries may not target crisis-affected populations. To illustrate this point, only 10 percent of projects in crisis-affected countries had an emergency-related keyword.[5] The Annex includes the list of countries that had an emergency response plan during the period of study.

- **Reliance on Training Data Quality:** The accuracy of our ML model is fundamentally dependent on the quality and representativeness of the training data. While the Phase 1 rule-based approach provided high-precision initial labels, and Phase 3's LLM-assisted human verification was designed to produce high-quality labels for ambiguous cases, any undetected errors in these datasets could have propagated into the final classifications. In this regard we faced two main challenges:

    - The inherent subjectivity in classifying projects as ECDiE-related: Even with a clear framework like the NCF, it is not always possible to definitively determine from a short project description whether a program directly impacts children aged 0-5. For example, a project focused on improving sanitation in a community might benefit young children's health, but without explicit mention of age-specific activities, its relevance to ECDiE remains a matter of interpretation. This ambiguity introduces a subjective element to the labeling process. Even high-quality, manually reviewed training examples could have benefited from review by multiple experts to ensure consistency. To address this, future research could focus on developing specific, standardized criteria for "troublesome" cases where a project's relevance is not immediately clear.

    - Classifying project descriptions, even with the aid of LLMs, remains a time-consuming and resource-intensive process. Each manually reviewed and verified entry is a valuable addition to the training data, directly contributing to the model's accuracy. This iterative process of refinement means the model's performance continued to improve as more high-quality, manually reviewed entries were included. However, the manual nature of this work, even when assisted by an LLM,

[5] The list of emergency-related keywords was: emergenc, refugee, displace, migratory, migrant, IDP, protract, humanitarian, disaster, catastrophe, war, wars, war-torn, war-afffected, warring, fragile, crisis, conflict, earthquake, tsunami, drought, flood, shelter, famine, volcanic eruption, and cyclone. We also avoided the following terms, as they gave false positives with the previous list: migratory birds, wildlife conflict, supply chain crisis, learning crisis, financial crisis, infrastructure crisis, and economic crisis.

presents a key limitation: the pace of model improvement was tied to the speed of human review. This highlights a classic trade-off between the quality of a supervised learning approach and the scalability of generating a comprehensive training dataset.

- **Generalization to Truly Novel Interventions:** While the model can generalize to new phrasing for known ECDiE concepts, it may struggle with completely novel ECDiE interventions or approaches that emerge in the future, if these are described using entirely new linguistic patterns not sufficiently represented in the training data. Continuous monitoring and retraining (beyond the scope of this project) would be necessary to capture such shifts.

- **Computational Intensity for Iteration:** While our methods are efficient for processing large datasets, the iterative refinement process in Phase 3, involving retraining and re-evaluation, is computationally more intensive than a single pass. The use of LLMs, while highly cost-effective for targeted tasks, introduces an external Application Programming Interface dependency and associated costs that, if scaled indefinitely, would require a larger budget.

- **Interpretability Trade-offs:** While our approach prioritized interpretability through TF-IDF and post-classification analysis, the internal workings of machine learning models inherently involve complex mathematical calculations that are not always immediately intuitive. We aim to present insights clearly, but the "black box" nature of some model components remains a characteristic of advanced ML.

- **Assumption of Proportionality in Forward-looking Projections:** The base case for the projections of future ECDiE flows assumes that the historical share of funding allocated to ECDiE will remain stable over time. In reality, actual allocations may shift significantly due to new crises, political changes, or shifts in donor strategies. While our scenario analysis was designed to account for some of this uncertainty, it cannot fully capture the complexity or unpredictability of future decision-making. It is also worth noting that the current period is unprecedented: 2025 has already seen historically large drops in development and humanitarian funding, and there is considerable uncertainty around how donors and foundations will respond in the coming years, let alone how these changes might affect funding for ECDiE specifically.

- **Qualitative Subjectivity:** Scenario development based on interviews will depend on perceptions and expectations that are inherently subjective. Although we triangulated these insights with documents and data, they remain interpretive rather than predictive.

Scope-Related Limitations

- **Focus on Project Descriptions:** Our methodology was based solely on the textual content of project descriptions available in the FTS and CRS databases (and some complementary data sources to provide richer descriptions). It did not incorporate additional data sources (e.g., full project documents, detailed budgets, monitoring reports) that might provide richer context but are not systematically available or within the scope of this project.

- **Funding Attribution Nuance:** While our classification identifies ECDiE-related projects, accurately attributing precise funding amounts to *only* the ECDiE components within multi-sectoral projects (which may include broader humanitarian or development activities) can be challenging. In the study, we identified the relevance of a project to ECDiE categories, but detailed financial attribution to different sectors was not performed. Additionally, when projects cover multiple sectors, it was not always possible to isolate the exact share of funding that went to ECD.

- **Focus on International Aid Flows:** The analysis is limited to international aid flows. Domestic government spending, unreported private philanthropy, household contributions, and other funding sources are not systematically included, which means actual investment in ECDiE may be higher than shown here.

4.0 HISTORICAL TRENDS ANALYSIS

- From 2018 to 2023, just 3.8 percent of total aid to crisis-affected countries supported ECD services. This is 4.9 percent of humanitarian aid on average between 2018-2024 and 3.7 percent of development assistance on average between 2018-2023.
- Across all years, bilateral donors consistently provided the largest share of ECDiE funding, forming the foundation of the resource envelope. Bilateral donors accounted for 62 percent and 69 percent of humanitarian and development funding, respectively, between 2018-2023.
- Foreign aid funding for ECD services in emergencies remained heavily concentrated in the health and nutrition domains of the Nurturing Care Framework. Funds to these two components combined corresponded to 77 percent and 84 percent of humanitarian and development funding respectively.

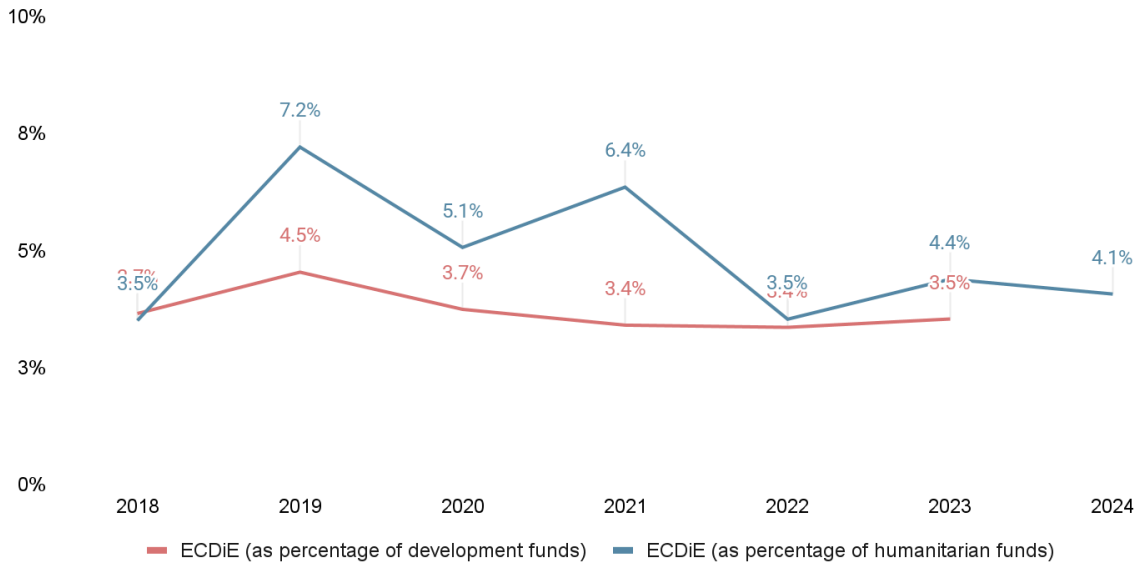
4.1 Historical Overview

From 2018 to 2023, just **3.8 percent of total aid to crisis-affected countries** supported ECD services. This is 4.9 percent of humanitarian aid on average between 2018-2024, or roughly $665 million out of $14 billion per year, and 3.7 percent of development assistance on average between 2018-2023, about $3.4 billion of nearly $100 billion per year.

3.7%
of development funds in crisis-affected countries go to ECD per year on average (between 2018-2023)

4.9%
of humanitarian funds go to ECD per year on average (between 2018-2024)

Figure 1: ECDiE flows as a share of total funds distributed to countries with crisis settings



Humanitarian funding

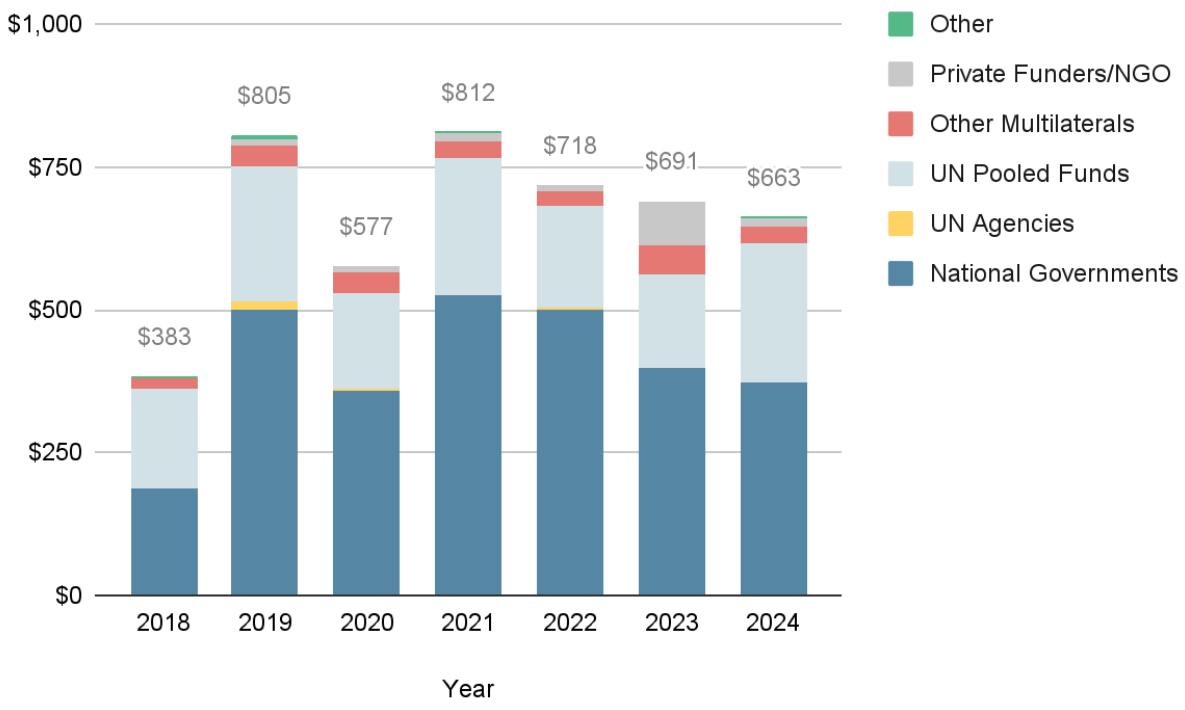
While ECDiE funding grew in moments, peaking at 7.2 percent of humanitarian aid in 2019, it has since fluctuated, dipping to 3.5 percent in 2022 before modest recovery to 4.1 percent in 2024.

Humanitarian funding for ECDiE has fluctuated considerably between 2018 and 2024. Overall allocations ranged from $383 million in 2018 to a peak of $812 million in 2021, before declining to $663 million in 2024. Funding for ECDiE nearly doubled between 2018 and 2019, largely due to sharp increases in contributions from national governments and UN pooled funds. This upward momentum carried through to 2021, which marked the highest year of support.

After 2021, however, funding contracted and fell steadily by an average of nearly 6.5 percent per year. By 2024, allocations had stabilized somewhat at $663 million, but remained well below the peak levels seen earlier in the period.

Across all years, bilateral donors consistently provided the largest share of humanitarian ECDiE funding, forming the foundation of the resource envelope. UN pooled funds served as the second-largest channel and were particularly important in years of high overall funding, such as 2019, 2021, and 2024. Contributions from private funders, NGOs, and other multilateral donors were comparatively modest, though they increased noticeably in 2023. Meanwhile, UN agencies and “other” sources remained marginal throughout the period. These figures do not capture domestic government spending within their own borders, meaning the estimates presented here reflect only international humanitarian and development assistance.

Figure 2: Humanitarian Funding for ECDiE by Donor Channel, USD Millions



In 2023, the largest contributors of humanitarian funding to ECD in emergencies were the United States ($224 million or over 32 percent of all ECDiE funding), the United Kingdom, and Japan, alongside key pooled funds such as the Central Emergency Response Fund and the European Commission. While bilateral donors accounted for the majority of funding, multilateral mechanisms and private funders also played a significant role, often with higher shares of their portfolios directed to ECDiE. For example, South Sudan's Humanitarian Fund allocated nearly 30 percent of its resources to ECDiE, and private groups such the Disasters Emergency Committee also contributed 24 percent of its humanitarian portfolio to ECD. Donors such as Norway and Switzerland have increased their contributions to ECDiE considerably in the two years between 2021 and 2023, as well as Multilaterals such as Education Cannot Wait Fund and several National Committees of UNICEF.

Table 2: Top humanitarian donors in 2023 by investment in ECDiE

Bilateral Donors	UN Pooled Funds and Multilaterals	Private Donors/NGOs
United States ($224 million) *Change from 2021:* ↑ 24% *Share to ECD 2023:* 4.9%	**Central Emergency Response Fund** ($48 million) *Change from 2021:* ↓ 39% *Share to ECD 2023:* 6.9%	**Disasters Emergency Committee** ($14 million) *Change from 2021:* NA *Share to ECD 2023:* 24%
United Kingdom ($31 million) *Change from 2021:* ↑ 29% *Share to ECD 2023:* 4.4%	**European Commission** ($41 million) *Change from* *Share to ECD*	**United States Fund for UNICEF** ($9 million) *Change from* *Share to ECD*

Bilateral Donors	UN Pooled Funds and Multilaterals	Private Donors/NGOs
	2021: ↑86% *2023:* 6.4%	*2021:* NA *2023:* 17%
Japan ($29 million) *Change from 2021:* ↑103% *Share to ECD 2023:* 2.7%	**Sudan Humanitarian Fund** ($27 million) *Change from 2021:* ↑218% *Share to ECD 2023:* 50%	**GAVI Alliance** ($9 million) *Change from 2021:* ↑5% *Share to ECD 2023:* 8.6%
Canada ($19 million) *Change from 2021:* ↓51% *Share to ECD 2023:* 5.7%	**Syria Cross-border Humanitarian Fund** ($23 million) *Change from 2021:* ↓3% *Share to ECD 2023:* 21%	**UNICEF National Committee Japan** ($5 million) *Change from 2021:* ↑164179% *Share to ECD 2023:* 16%
Norway ($18 million) *Change from 2021:* ↑110% *Share to ECD 2023:* 3.4%	**Yemen Humanitarian Fund** ($17 million) *Change from 2021:* ↓44% *Share to ECD 2023:* 25%	**Qatar Charity** ($5 million) *Change from 2021:* NA *Share to ECD 2023:* 9.3%
Switzerland ($14 million) *Change from 2021:* ↑409% *Share to ECD 2023:* 6.3%	**South Sudan Humanitarian Fund** ($15 million) *Change from 2021:* ↓42% *Share to ECD 2023:* 29%	**Private individuals & organizations** ($5 million) *Change from 2021:* ↑170% *Share to ECD 2023:* 2.2%
Germany ($12 million) *Change from 2021:* ↓50% *Share to ECD 2023:* 1.4%	**Education Cannot Wait Fund** ($9 million) *Change from 2021:* ↑5276% *Share to ECD 2023:* 7.3%	**Mohamad Bin Rashid Al Maktoum Foundation** ($4 million) *Change from 2021:* NA *Share to ECD 2023:* 32%
France ($12 million) *Change from 2021:* ↑61% *Share to ECD 2023:* 6.9%	**Occupied Palestinian Territory Humanitarian Fund** ($7 million) *Change from 2021:* ↑154% *Share to ECD 2023:* 13%	**UNICEF National Committee Switzerland** ($3 million) *Change from 2021:* NA *Share to ECD 2023:* 26%
Sweden ($12 million) *Change from 2021:* ↑76% *Share to ECD 2023:* 10.4%	**Central African Republic Humanitarian Fund** ($6 million) *Change from 2021:* ↑62% *Share to ECD 2023:* 37%	**Radiohjälpen (Radio Aid Sweden)** ($3 million) *Change from 2021:* NA *Share to ECD 2023:* 100%
Australia ($6 million)	**The Commonwealth** ($5 million)	**UNICEF National Committee**

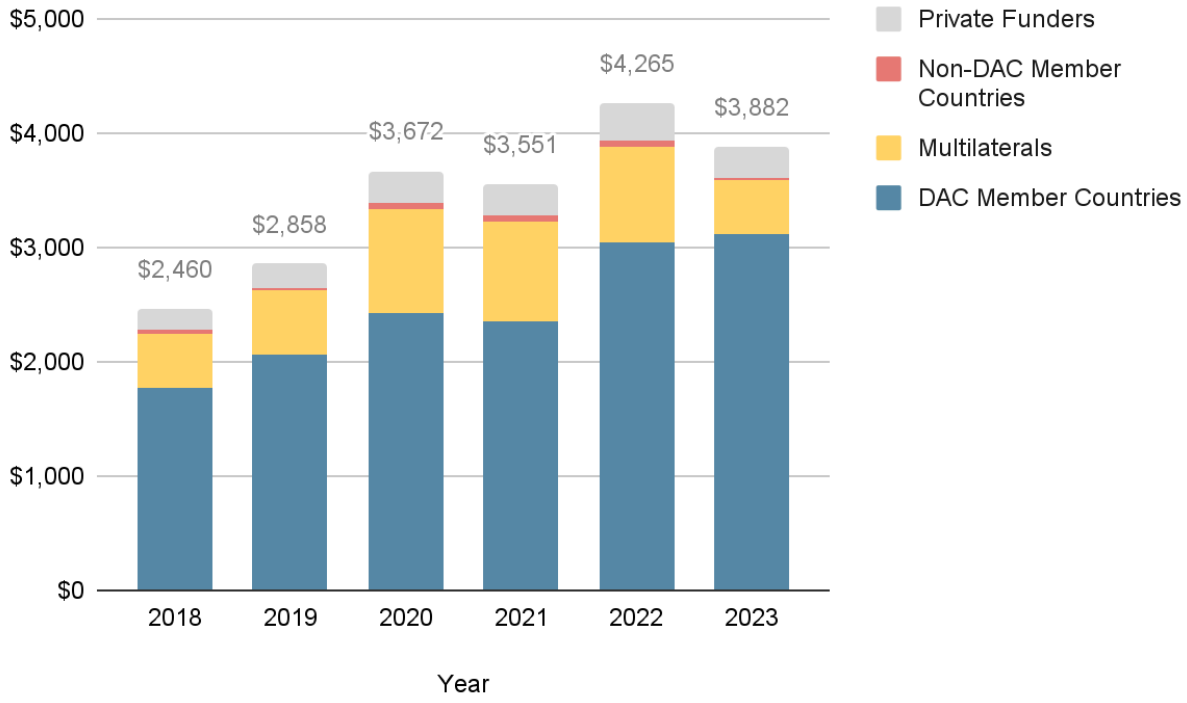
Bilateral Donors		UN Pooled Funds and Multilaterals		Private Donors/NGOs
Change from 2021: ↑194%	*Share to ECD 2023:* 3.3%	*Change from 2021:* NA	*Share to ECD 2023:* 100%	**Germany** ($3 million) *Change from 2021:* ↑635% *Share to ECD 2023:* 6.5%

Development funding

Looking more broadly at development funding in crisis-affected countries, the majority of development assistance (69 percent) for ECD in emergency settings has come from DAC countries, followed by nearly 29 percent provided by multilateral donors and private funders. This reliance makes the recent wave of donor announcements particularly troubling.

The United States is especially consequential, both as the largest bilateral donor to ECDiE in 2023, contributing nearly $1,804 million across development and humanitarian funding, comprising over 39 percent of total ECDiE funding from both funding sources, and as one of the governments planning the most severe reductions.

Figure 3: Development Funding for ECDiE by Donor Channel, USD Millions



In 2023, the largest development donors to ECD in crisis-affected countries were the United States ($1,580 million), Germany ($286 million), and Japan ($258 million), with the United Kingdom, EU institutions, Canada, France, Sweden, Norway, and Korea also contributing significant amounts. Among multilateral donors, the World Bank's International Development Association ($265 million) was by far the largest source, while UNICEF also directed a notable share of its portfolios to investments for young children in countries with humanitarian crises (25 percent). Considerable resources also came from private funders such as the Gates Foundation (13 percent of its

reported portfolio), the Conrad N. Hilton Foundation (41 percent), and the Helmsley Charitable Trust (31 percent) with higher proportions of their giving going to ECD compared to bilateral and multilateral donors (see next table). The table below summarizes ODA funding to crisis-affected countries from each donor/source, change in these funding levels over the past two years, and what percentage of each donor's portfolio goes to ECDiE.

Table 3: Top development donors in 2023 by investment in ECD in crisis-affected countries

Bilateral Donors	Multilateral Donors	Private Donors/NGOs
United States ($1,580 million) *Change from 2021:* ↑53% *Share to ECD 2023:* 8.2%	**International Development Association** ($265 million) *Change from 2021:* ↓9% *Share to ECD 2023:* 1.8%	**Gates Foundation** ($194 million) *Change from 2021:* ↑42% *Share to ECD 2023:* 13%
Germany ($286 million) *Change from 2021:* ↑10% *Share to ECD 2023:* 1.9%	**Global Alliance for Vaccines and Immunization** ($66 million) *Change from 2021:* ↓74% *Share to ECD 2023:* 4.8%	**Wellcome Trust** ($15 million) *Change from 2021:* ↑259% *Share to ECD 2023:* 7.4%
Japan ($258 million) *Change from 2021:* ↑169% *Share to ECD 2023:* 3.7%	**Global Fund** ($60 million) *Change from 2021:* ↓77% *Share to ECD 2023:* 1.8%	**Wellcome Trust** ($15 million) *Change from 2021:* ↑259% *Share to ECD 2023:* 7.4%
United Kingdom ($194 million) *Change from 2021:* ↑85% *Share to ECD 2023:* 3.9%	**UNICEF** ($35 million) *Change from 2021:* ↑14% *Share to ECD 2023:* 25%	**Wellcome Trust** ($15 million) *Change from 2021:* ↑259% *Share to ECD 2023:* 7.4%
EU Institutions ($145 million) *Change from 2021:* ↓8% *Share to ECD 2023:* 2.0%	**Inter-American Development Bank** ($15 million) *Change from 2021:* ↓19% *Share to ECD 2023:* 1.9%	**UBS Optimus Foundation** ($5 million) *Change from 2021:* ↑351% *Share to ECD 2023:* 9.4%
Canada ($138 million) *Change from 2021:* ↓39% *Share to ECD 2023:* 4.9%	**Asian Development Bank** ($13 million) *Change from 2021:* ↑653% *Share to ECD 2023:* 0.8%	**Margaret A. Cargill Foundation** ($3 million) *Change from 2021:* ↑10% *Share to ECD 2023:* 81%
France ($92 million) *Change from 2021:* ↑34% *Share to ECD 2023:* 2.3%	**World Food Programme** ($9 million) *Change from 2021:* ↑40% *Share to ECD 2023:* 40%	**Children's Investment Fund Foundation** ($3 million) *Change from 2021:* ↓34% *Share to ECD 2023:* 2.5%
Sweden ($72 million)	**African Development Fund** ($2 million)	**Howard G. Buffet Foundation** ($2 million)

Bilateral Donors	Multilateral Donors	Private Donors/NGOs
Change from 2021: ↓60% *Share to ECD 2023:* 5.2%	*Change from 2021:* ↑547% *Share to ECD 2023:* 0.2%	*Change from 2021:* NA *Share to ECD 2023:* 0.4%
Norway ($63 million) *Change from 2021:* ↑72% *Share to ECD 2023:* 4.1%		**Van Leer Foundation** ($1 million) *Change from 2021:* ↓49% *Share to ECD 2023:* 29%
Korea ($44 million) *Change from 2021:* ↑31% *Share to ECD 2023:* 3.8%		**La Caixa Banking Foundation** ($1 million) *Change from 2021:* ↑1,413% *Share to ECD 2023:* 11%

Experts expressed uncertainty about how other donors, and especially private foundations might respond to the announced ODA cuts. **Some noted that while multilaterals and philanthropic actors could play a role in offsetting reduced bilateral commitments, there was little evidence of clear plans or sufficient scale to fill the gap.** While some private actors are engaged in ECDiE, their contributions have historically been modest and fragmented, raising doubts about their capacity to fill significant gaps. Several interviewees stressed that those investments aligned with the Nurturing Care Framework to support the holistic needs of children are often treated as a secondary concern in crisis settings, particularly when weighed against immediate survival needs such as food, shelter, and health.

"Investing in ECD is often considered a luxury rather than an essential, especially concerning educational and mental health aspects in emergencies." (Expert opinion)

4.2 Where Do These Funds Flow?

In 2023, ECD funding in crisis-affected countries was concentrated in a handful of contexts. The Democratic Republic of the Congo was the largest recipient, reflecting both the scale of need and sustained donor engagement over recent years. Other major recipients included Bangladesh, Nigeria, Syria, and Tanzania, which together accounted for 24 percent of overall resources.

Table 4: Top recipient countries for ECDiE in 2023

Humanitarian Funding	Development Funding in Crisis-affected Countries
Bangladesh ($205 million)	**Democratic Republic of the Congo** ($332 million) *Years with response plan:* 2018-2023
Syrian Arab Republic ($176 million)	**Nigeria** ($270 million) *Years with response plan:* 2018-2023

Humanitarian Funding	Development Funding in Crisis-affected Countries
South Sudan ($95 million)	**Tanzania** ($266 million) *Years with response plan:* 2020-2023
Sudan ($94 million)	**Mozambique** ($198 million) *Years with response plan:* 2019-2023
Nigeria ($27 million)	**Ethiopia** ($193 million) *Years with response plan:* 2018-2023
Yemen ($20 million)	**Kenya** ($171 million) *Years with response plan:* 2020-2023
Burkina Faso ($15 million)	**Ecuador** ($168 million) *Years with response plan:* 2019-2023
Occupied Palestinian Territory ($11 million)	**Zambia** ($143 million) *Years with response plan:* 2020-2023
Democratic Republic of the Congo ($6 million)	**Pakistan** ($142 million) *Years with response plan:* 2018-2023
Central African Republic ($6 million)	**Uganda** ($140 million) *Years with response plan:* 2020-2023

Interviews with stakeholders in recipient countries suggested that cuts or stagnation in external support are likely to translate into reduced coverage and narrowing of services. Respondents noted that while governments may protect certain core health interventions, other ECD components, such as parenting support, early learning, and psychosocial care, are particularly vulnerable to funding shortfalls. **Officials also emphasized that domestic budgets are already under strain, leaving little flexibility to compensate for gaps left by donors.**

"The Ministry of Health's budget only covers vaccinations and child insurance, leaving other crucial ECD programs like Integrated Management of Newborn and Child Health illnesses, parenting programs, and early detection of developmental delays unfunded." (Recipient country official)

4.3 In Which Sectors are ECDiE Funds Invested?

Humanitarian funding for ECDiE is highly unbalanced. Early childhood services were categorized by the following types of interventions that align with the widely accepted, holistic definition developed under the Nurturing Care Framework (WHO et al. 2018):

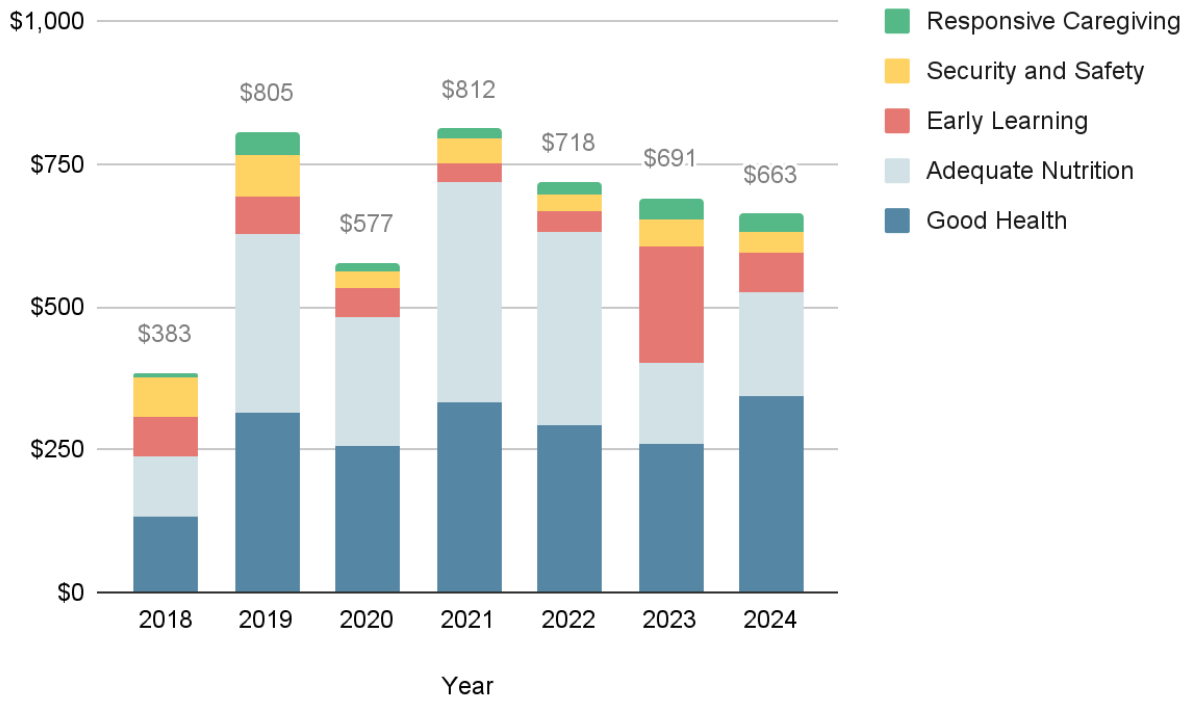
- **Health services** (e.g., maternal, newborn and child healthcare and hygiene);
- **Nutrition services** (e.g., exclusive breastfeeding, healthy eating);
- **Protection interventions** (e.g., birth registration, protection from violence);
- **Responsive caregiving support** (e.g., coaching caregivers on child development and caregiver responsiveness, caregiver mental health support); and
- **Early learning opportunities** (e.g., pre-school, childcare provision, learning through play).

Humanitarian funding for ECD services remains heavily concentrated in the health and nutrition domains of the Nurturing Care Framework. **Between 2018 and 2024, the bulk of resources (77 percent) consistently went to good health and adequate nutrition**. By contrast, responsive caregiving, early learning, and child protection/security received only a fraction of overall support. For example, responsive caregiving represented just

3.6 percent of humanitarian ECD funding between 2018 and 2024 annually, with levels trending upwards in the past three years. Early learning was nearly twelve percent of ECD in humanitarian settings annually in the same time period. Because domestic budgets rarely cover these areas, they remain almost entirely dependent on external donor contributions.

"I suspect that early childhood development funding will predominantly fall into health and nutrition streams across various funding types. I am less confident that there will be significant funding for education." (Expert opinion from a donor organization)

Figure 4: Humanitarian Funding for ECDiE by Nurturing Care Framework Component, USD Millions



Case Studies: Beyond ECDiE as Defined by the Nurturing Care Framework

This study uses the Nurturing Care Framework as a foundation with which to define early childhood development, break it down into components, and determine the bounds of what ECDiE-related interventions are. Still, there are other programs (like cash transfers) that despite potentially benefitting children and young families in emergencies, are not directly related to the scope used in this study. Here we highlight a few cases of funded programs that, despite not being categorized as related to ECDiE, could still have benefitted young children in emergencies.

Development Funding Case Study:
Kenya's Hunger Safety Net Programme

- **Donor:** United Kingdom, Department for International Development
- **Year:** 2019
- **Recipient country:** Kenya
- **Disbursed amount (USD):** $16,654,000

Humanitarian Funding Case Study:
Cash-based Emergency Assistance in Syria

- **Donor:** Syria Cross-border Humanitarian Fund
- **Year:** 2021
- **Recipient country:** Syria
- **Disbursed amount (USD):** $1,316,000
- **Description:** "The project intends to integrate

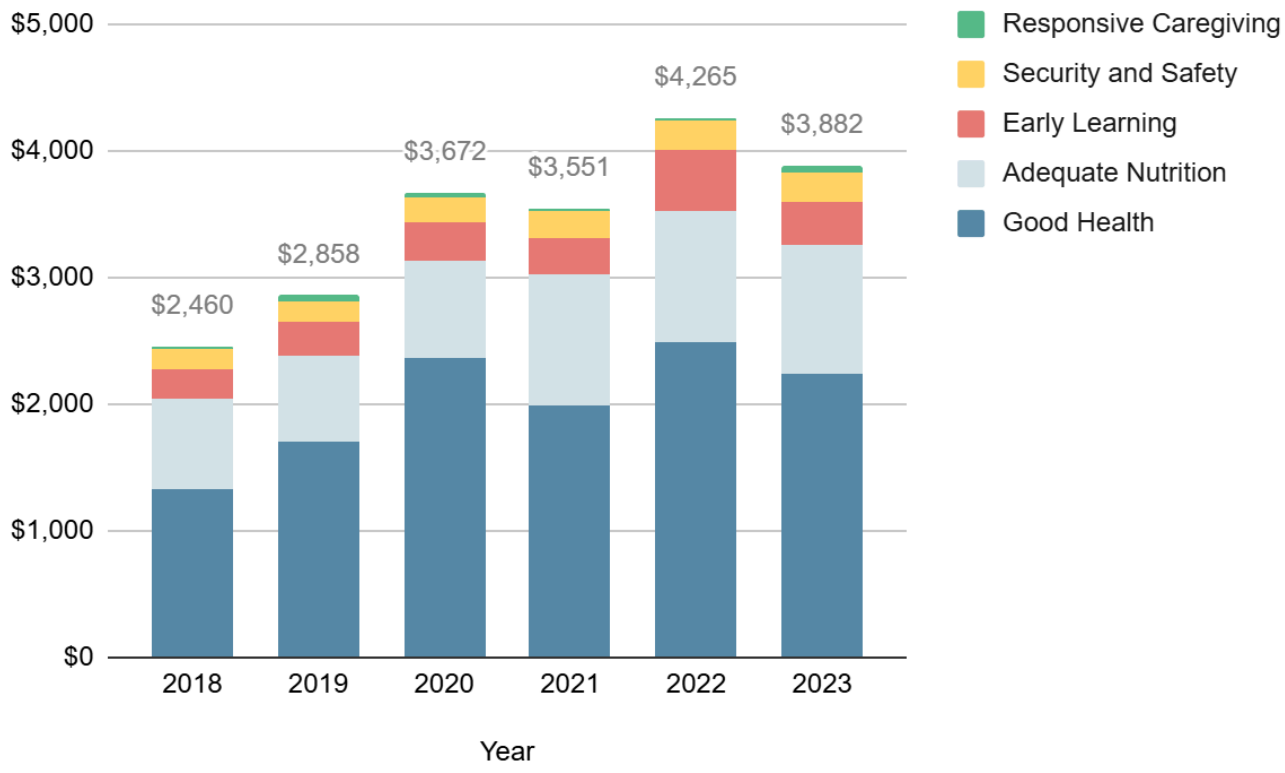
- **Description: "**To reduce poverty, hunger and vulnerability by providing 100,000 of the poorest households (approximately 600,000 people) in Kenya's arid and semi-arid lands with cash transfers and up to an additional 250,000 households (approximately 1,250,000 people) during drought emergencies." livelihood, food security and wash using cash as a modality. Proposed intervention has 2 components: (1) distribution of cash to internally displaced persons (IDPs) in camps and vulnerable HC [sic] members to cover their urgent lifesaving needs (2) Small grants for 50 women to improve their resilience towards external shocks through a sustainable livelihood."

Development funding for ECD in crisis-affected countries is also highly concentrated in health- and nutrition-related interventions. **Between 2018 and 2023, 84 percent of resources went to the good health and adequate nutrition domains.** Early learning accounted for less than 10 percent of funding, leaving less than 7 percent of funding for responsive caregiving and safety and security combined.

This persistent imbalance in funding shapes the services available to children in emergencies. Children in crisis countries receiving development and humanitarian assistance are likely to continue receiving many health and nutrition interventions, which donors and governments prioritize even during periods of contraction. However, programs that build secure relationships, support caregiver well-being, and provide early learning through play are far more limited. **Several experts cautioned that these "thrive" components of nurturing care are the most at risk of being sidelined.**

"Child survival will be protected. Wider components like early learning, mental health, and play spaces will very much doubtfully receive urgent prioritization. The 'thrive' component will likely suffer." (Expert opinion)

Figure 5: Development Funding for ECDiE by Nurturing Care Framework Component, USD Millions



Experts noted that **ECDiE is more likely to be funded when integrated into existing domestic health, nutrition, or protection programs, rather than treated as a stand-alone priority**. This cross-sectoral positioning may determine whether responsive caregiving, psychosocial support, and early learning are protected or left unfunded in the years ahead.

Deep Dive: United States Bilateral Contributions to ECD in 2018-2024

U.S. Humanitarian Funding by Sector (2018-2024)

Of the $30.6 billion in humanitarian funding contributed by the United States in the seven-year span, 4.8 percent ($1.5 billion) was dedicated to ECD-relevant programming.

- Almost half went to Adequate Nutrition and 37 percent to Good Health.
- Early Learning accounted for 9.2 percent of funding.
- Safety and Security and Responsive Caregiving each accounted for slightly over 2 percent.

U.S. Humanitarian Funding by Destination (2018-2024)

Over three quarters of total U.S.-funded ECD humanitarian contributions went to just four countries:

1. South Sudan (37 percent)
2. Bangladesh (17 percent)
3. Somalia (14 percent)
4. Sudan (9 percent)

Syria, Ethiopia, Nigeria, Mali, Chad, and Burkina Faso completed the top ten list of countries by U.S.-funded ECD-relevant humanitarian funding.

U.S. Development Funding by Sector (2018-2023)

The United States contributed $6.5 billion in development funding to ECD-relevant programming in the six-year span.

- Almost three quarters went to Good Health and 20 percent to Adequate Nutrition.
- Early Learning accounted for 4.5 percent of funding.
- Safety and Security and Responsive Caregiving each accounted for under 1 percent.

U.S. Development Funding by Destination (2018-2023)

Over half of total U.S.-funded ECDiE development contributions went to eight countries:

1. Nigeria (11 percent)
2. Democratic Republic of the Congo (9 percent)
3. Ethiopia (8 percent)
4. Tanzania (6 percent)
5. Zambia (6 percent)
6. Uganda (5 percent)
7. Kenya (5 percent)
8. Mozambique (4 percent)

Bangladesh, Haiti, Mali, and Jordan completed the top 12 list of countries by U.S.-funded ECDiE-relevant development funding.

ECDiE humanitarian projects often targeted more than one of the Nurturing Care Framework components, with significant overlap between the good health and adequate nutrition components on one hand, as well as the security and safety and responsive caregiving components on the other. The methodology allowed the categorization of ECDiE projects into multiple categories, if relevant. Among all humanitarian projects that fell under good health, 41 percent also fell under adequate nutrition. Similarly, among all humanitarian projects that fell under adequate nutrition, 75 percent also fell under good health. These results underscore the close interaction between adequate nutrition and good health for the survival of children in emergencies. One illustrative project that was categorized as pertaining to both components had the following description: "*Provision of life-saving nutrition services to children affected by SAM in Puntland and Somaliland with persistent and projected emergency GAM prevalence."* The early learning, security and safety, and responsive caregiving components had little overlap with the other two, but did have considerable overlap with one another, especially between security and safety and responsive caregiving. Among responsive caregiving projects, 86 percent also fell into security and safety, while among safety and security projects 61 percent also fell into responsive caregiving.

Table 5: Nurturing Care Framework Component Overlap Among Humanitarian Projects (2018-2024)

Percentage of Humanitarian Projects Also Categorized Into Other NCF Components					
	Good Health	Adequate Nutrition	Early Learning	Security and Safety	Responsive Caregiving
All Good Health Projects	100%	41%	1%	1%	1%
All Adequate Nutrition Projects	75%	100%	1%	1%	2%
All Early Learning Projects	2%	2%	100%	42%	16%
All Security and Safety Projects	2%	1%	26%	100%	61%
All Responsive Caregiving Projects	2%	4%	14%	86%	100%

In ECDiE development projects, there was a less marked overlap between good health and adequate nutrition projects. Only 29 percent of adequate nutrition projects were also categorized as related to good health, and only 15 percent of good health projects were categorized as also related to adequate nutrition. There was some overlap in responsive caregiving projects and good health, early learning, and security and safety ones, although responsive caregiving projects represented only a small share of development projects related to ECDiE.

Table 6: Nurturing Care Framework Component Overlap Among Development Projects (2018-2023)

Percentage of Development Projects Also Categorized Into Other NCF Components					
	Good Health	Adequate Nutrition	Early Learning	Security and Safety	Responsive Caregiving
All Good Health Projects	100%	15%	1%	3%	2%
All Adequate Nutrition Projects	29%	100%	1%	2%	1%
All Early Learning Projects	4%	3%	100%	8%	7%
All Security and Safety Projects	19%	4%	12%	100%	8%
All Responsive Caregiving Projects	43%	9%	36%	30%	100%

5.0 FUNDING PROJECTIONS

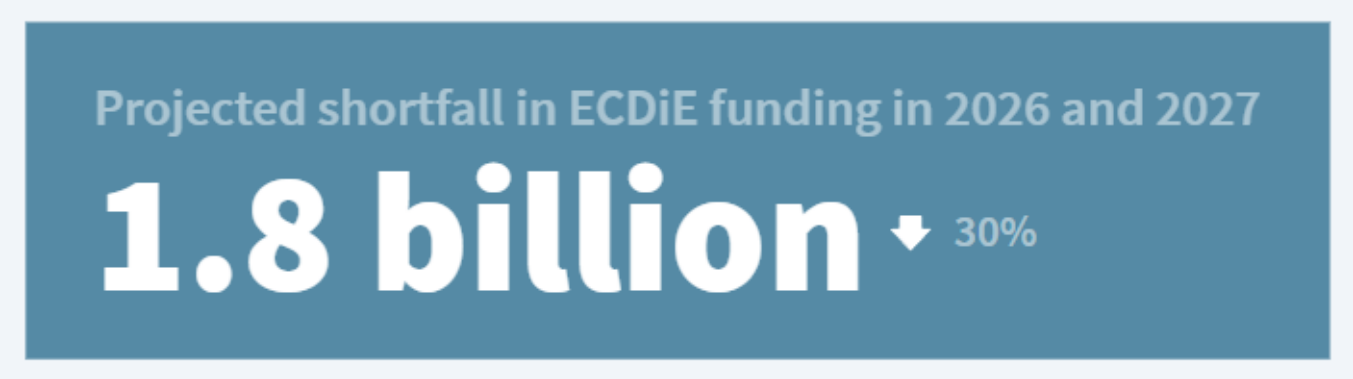
- Based on recent budget announcements and a member survey, OECD has suggested that by 2027, ODA could be nearly 30 percent lower compared to 2023 levels (OECD 2025).
- Even if ECDiE maintains its small share of total aid, an expected 30 percent decline in overall assistance means over $1.8 billion fewer dollars for ECD in crisis settings in 2026 and 2027 alone, compared to 2024.

Total development and humanitarian funding began to decline in 2024 compared to 2023 levels, and international assistance is projected to face substantial reductions in 2025. As of June 2025, Austria, Belgium, Finland, France, Germany, the Netherlands, New Zealand, Sweden, Switzerland, the United Kingdom, and the United States had all announced cuts to ODA for the 2025–27 period (OECD 2025). As a result, according to OECD projections ODA in 2025 alone could decrease by 9 to 17 percent, including a 21 to 36 percent reduction in humanitarian aid (OECD 2025). While national budgets for 2026 and beyond have not yet been finalized as of August 2025, OECD estimates based on donor announcements and member state surveys suggest that ODA in 2027 could fall by nearly 30 percent compared to 2023 levels (OECD 2025).

These trends place additional strain on a system already unable to meet existing needs. In 2024, only 42 percent of requirements set out in humanitarian appeals were met (OCHA 2024; Strucke and Cohen 2025). The United Nations projects that 305 million people will require humanitarian assistance in 2025, including nearly 400 million children worldwide living in or displaced by conflict (OCHA 2024).

"In a context of limited resources, ECD is often at risk of being deprioritized compared to sectors considered vital in the short term (health, food security, refugee management)." (Recipient country official)

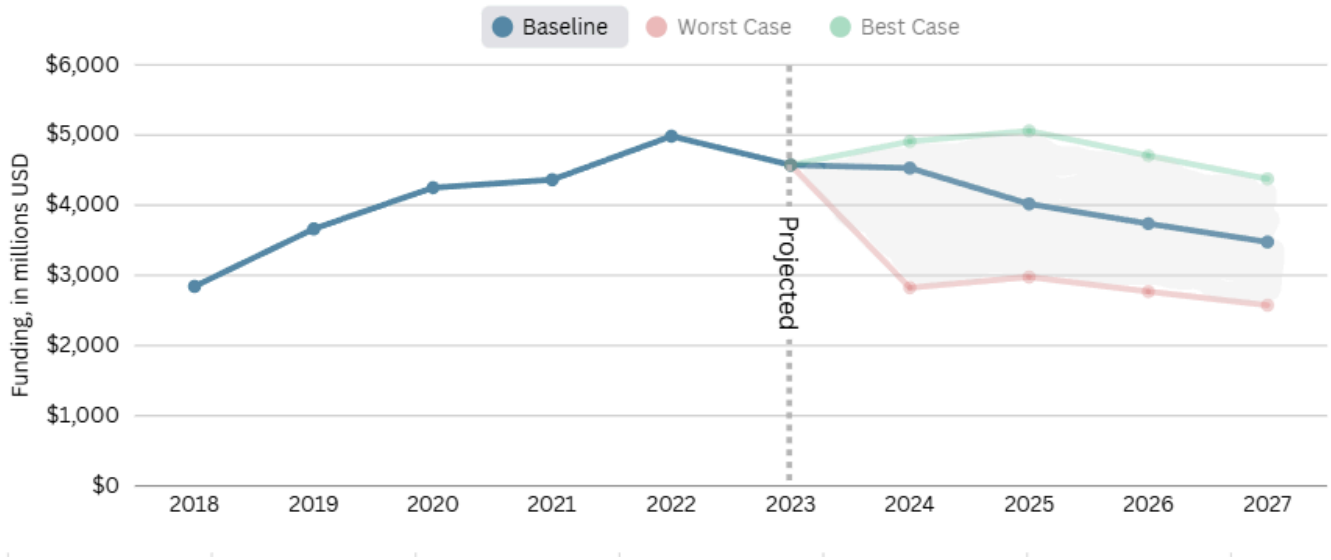
For ECDiE, these reductions are likely to have significant consequences. Even if ECDiE maintains its current share of overall aid, **a 30 percent decline in international assistance would correspond to over $1.8 billion less in funding for ECD (both ODA and humanitarian) in crisis settings across 2026 and 2027, compared to 2024**. This includes an estimated reduction of more than $150 million from humanitarian aid over the next two years alone. Such reductions would affect the availability of services such as nutrition, caregiver support, and early learning. One recipient government official noted that under these conditions, ECD may be deprioritized relative to other life-saving needs. At the same time, another expert observed that middle-income countries are increasingly seeking to mobilize domestic resources to offset these gaps, which they considered a positive step toward sustainable financing.



In 2024, funding shortfalls already had tangible effects. More than 220,000 children under five with severe acute malnutrition went untreated in the Democratic Republic of Congo, and approximately one-third of nutrition facilities for children were closed in Nigeria and other crisis-affected contexts (OECD 2025). If current trends continue, large numbers of young children could face reduced access to essential nutrition, health, and early learning services each year.

Forward-looking scenarios illustrate the potential scale of these gaps. Modeling a range of outcomes that assumes the proportion of funding for ECD in crisis settings could vary by one percentage point above or below historical levels, shortfalls in 2026 and 2027 could amount to between $69 million $3.3 billion in ODA. For humanitarian assistance, this would correspond to an estimated reduction of $90 million to $390 million in funding for ECD over the next two years. While there is no universally agreed benchmark for what proportion of aid should be dedicated to ECDiE, the analysis suggests that even under optimistic scenarios, where 3.4 percent of funding reaches young children, allocations would likely remain below their share of the population in need.

Figure 6: ECDiE flows over time (total funds distributed to countries with crisis settings)



6.0 CONSIDERATIONS FOR THE WAY FORWARD

Interviews with donors, recipients, and advisors highlighted several pathways to sustain and expand investment in ECDiE, ranging from how it is framed to how it is financed.

1. Framing ECDiE, including the "Thrive" Agenda as Essential, Not Optional

Experts stressed that the future of ECDiE depends on whether it is consistently positioned as a core part of humanitarian response rather than as an optional add-on. Health and nutrition are typically prioritized because they are viewed as directly linked to survival, while the "thrive" components of early childhood development. responsive caregiving, caregiver mental health, and play-based early learning, are often sidelined as non-essential.

The opportunity is to reframe these services as both life-saving and resilience-building. Neglecting children during the first five years has irreversible consequences, and investing in psychosocial support, caregiver coaching, and early learning directly protects children's development and future potential. Advocacy should highlight that these interventions not only help children survive today but also reduce future costs by improving resilience, school readiness, and social stability. By broadening the definition of what counts as essential in emergencies, the full nurturing care agenda can be better protected from cuts.

2. Integration with Stronger Sectors

Both donors and recipients agreed that ECDiE has a better chance of being funded when embedded into established sectors like health, nutrition, education, child protection, and WASH, rather than presented as a stand-alone priority. In practice, this means linking responsive caregiving to maternal health services, integrating psychosocial support into nutrition programs, or embedding early learning in education clusters. This cross-sectoral approach makes ECDiE harder to separate from services that donors already see as indispensable, increasing its chances of being maintained even in times of budget contraction.

Experts also noted that integration helps ECDiE overcome competition with other humanitarian sectors. Instead of being crowded out by food security or health, ECDiE can be positioned as an integral part of achieving those outcomes. For example, nutrition programs that include caregiver support may have stronger impacts on child well-being, and health interventions that link to early learning can improve school readiness. By embedding ECDiE into these broader systems, advocates can demonstrate that early childhood interventions amplify the effectiveness of existing humanitarian investments, rather than diverting resources from them.

3. Expanding the Funding Base Beyond DAC Donors

With bilateral ODA under severe pressure, many experts pointed to philanthropy, development finance institutions, and private capital as potential sources of future growth for ECDiE. Initiatives like *Play, Learn, Thrive* and the World Bank's Early Learning Partnership show that targeted philanthropic and multilateral funding can mobilize significant resources. Experts also noted the appeal of the "triple dividend" of childcare investments, benefiting children, parents, and providers, as an entry point for private finance and blended models.

Experts emphasized that while philanthropic investment has long existed, the trend of viewing ECD as a *strategic investment* rather than charity is more recent. The opportunity lies in packaging ECDiE investments in ways that align both with investors' desire for capital returns and with social impact outcomes. At the same time, one expert cautioned that there are currently *no clear examples of successful impact investment cases* in ECDiE, in part because programs are highly localized and difficult to replicate across different crisis contexts. Private investors also tend to prefer longer-term development or growth-oriented sectors.

As a way forward, one expert suggested exploring partnerships with actors like GSM Association (GSMA), which operate in emergencies with local-based financing models even if their primary focus is not ECD. Overall, experts agreed that private finance is unlikely to replace public ODA, but could play a catalytic role in innovation, piloting, or bridging gaps in "thrive" services such as caregiver mental health and early learning until larger donors or governments can step in.

4. National Demand and Political Alignment

Recipient governments highlighted that ECD is most vulnerable when it is not formally included in national strategies for health, education, or social protection. In many cases, ministries of health cover only basic services like vaccinations and child insurance, leaving gaps in areas such as parenting programs, caregiver training, and early detection of developmental delays. When ECD services are absent from national plans, they are often dependent on external donor funding, which makes them more exposed to international budget cuts.

The opportunity is to strengthen political ownership of ECD by embedding it in government strategies and aligning it with the Sustainable Development Goals and national development priorities. This would allow governments to make a stronger case to donors that ECD is a core part of their systems, not a temporary add-on. Political alignment can also help shift the perception of ECD from a donor-driven agenda to a nationally owned priority, which may increase the likelihood of sustained funding and integration into domestic budgets over time.

5. Evidence and Storytelling

Donors made clear that future investment will depend on strong evidence that ECDiE interventions are cost-effective, scalable, and capable of producing measurable results in crisis contexts. They are looking for credible data that demonstrates the impact of ECD on survival, recovery, and long-term human capital. At the same time, experts emphasized that evidence alone is not enough. Stories from caregivers, service providers, and communities are equally powerful in persuading decision-makers that these interventions are both urgent and transformative.

The opportunity is to combine rigorous evidence with compelling narratives that bring the data to life. For example, showing how a small investment in caregiver coaching can reduce malnutrition or stress in young children can highlight both cost-effectiveness and human impact. Evidence can also be used to show how ECD investments multiply the effectiveness of other humanitarian spending, while stories help connect these findings to lived experiences. Together, this dual approach can make advocacy more persuasive for both policymakers and donors.

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8.0 ANNEX: LIST OF CRISIS-AFFECTED COUNTRIES

The following table includes the list of countries with an emergency response plan during the study period, including humanitarian response plans, regional response plans, flash appeals, and COVID global humanitarian response plans.

Country Name	2018	2019	2020	2021	2022	2023
Aruba		x	x	x	x	x
Afghanistan	x	x	x	x	x	x
Angola			x	x	x	x
Argentina		x	x	x	x	x
Burundi	x	x	x	x	x	x
Benin			x			
Burkina Faso	x	x	x	x	x	x
Bangladesh	x	x	x	x	x	x
Bulgaria						x
Bolivia (Plurinational State of)			x	x	x	x
Brazil		x	x	x	x	x
Central African Republic (the)	x	x	x	x	x	x
Chile		x	x	x	x	x
Cameroon	x	x	x	x	x	x
Congo (the Democratic Republic of the)	x	x	x	x	x	x
Congo (the)			x	x	x	x
Colombia		x	x	x	x	x
Costa Rica		x	x	x	x	x
Cuba					x	
Curaçao		x	x	x	x	x
Czechia						x

Country Name	2018	2019	2020	2021	2022	2023
Djibouti			x	x	x	x
Dominican Republic (the)		x	x	x	x	x
Ecuador		x	x	x	x	x
Egypt	x	x	x	x	x	x
Estonia						x
Ethiopia	x	x	x	x	x	x
Guatemala				x	x	x
Guyana		x	x	x	x	x
Honduras				x	x	x
Haiti	x	x	x	x	x	x
Hungary					x	x
Indonesia	x					
Iran (Islamic Republic of)		x	x		x	x
Iraq	x	x	x	x	x	x
Jordan	x	x	x	x	x	x
Kenya			x	x	x	x
Lebanon	x	x	x	x	x	x
Liberia			x			
Libya	x	x	x	x	x	x
Sri Lanka					x	
Lesotho			x			
Lithuania						x
Latvia						x
Moldova (the Republic of)					x	x

Country Name	2018	2019	2020	2021	2022	2023
Madagascar		x		x	x	x
Mexico		x	x	x	x	x
Mali	x	x	x	x	x	x
Myanmar	x	x	x	x	x	x
Mongolia						x
Mozambique		x	x	x	x	x
Mauritania	x					
Malawi					x	x
Niger (the)	x	x	x	x	x	x
Nigeria	x	x	x	x	x	x
Nepal				x		
Pakistan	x	x	x	x	x	x
Panama		x	x	x	x	x
Peru		x	x	x	x	x
Philippines (the)	x		x		x	
Poland					x	x
Korea (the Democratic People's Republic of)	x	x	x			
Paraguay		x	x	x	x	x
Palestine, State of	x	x	x	x	x	x
Romania					x	x
Rwanda			x	x	x	x
Sudan (the)	x	x	x	x	x	x
Senegal	x					
Sierra Leone			x			

Country Name	2018	2019	2020	2021	2022	2023
El Salvador				x	x	x
Somalia	x	x	x	x	x	x
South Sudan	x	x	x	x	x	x
Slovakia					x	x
Syrian Arab Republic	x	x	x	x	x	x
Chad	x	x	x	x	x	x
Togo			x			
Tajikistan					x	x
Turkmenistan					x	x
Trinidad and Tobago		x	x	x	x	x
Turkey	x	x	x	x	x	x
Tanzania, United Republic of			x	x	x	x
Uganda			x	x	x	x
Ukraine	x	x	x	x	x	x
Uruguay		x	x	x	x	x
Uzbekistan					x	x
Venezuela (Bolivarian Republic of)		x	x	x	x	x
Yemen	x	x	x	x	x	x
Zambia			x	x	x	x
Zimbabwe		x	x	x		
Total Countries Covered by Emergency Response Plan	**33**	**50**	**64**	**61**	**72**	**75**

9.0 ANNEX: LIST OF KEYWORDS

The following table includes the list of keywords used to help determine projects related with each one of the different categories.

Good Health	Alone	pregnancy, nutrition of pregnant, nutrition of lactating, neonatal, antenatal, ante natal, anc, postnatal, post natal, pre natal, prenatal, mnch, peri natal, perinatal, pre natal, peri natal, child health, malaria, breastfeed, brain development, maternal depression, development disorder, new born child health
	General	lactating, birth, plw, vaccination, immunization, vaccine, immunise, jab, inoculation, deworming, lactation, nutrition screening, food fortification, rutf, ready to use therapeutic food, growth monitoring, zinc, nursery, iron supplement
Adequate Nutrition	Alone	sam, severe acute malnutrition, mam, moderate acute malnutrition, prevention of malnutrition, undernutrition, prevent and treat malnutrition, rutf, nutrition screening, nutritional screening, micronutrient, ready to use therapeutic food, supplementary feeding, vitamin a, wasting, stunting
	General	undernourished, food fortification, nutritional, zinc, iron supplement, breastmilk
Early Learning	Alone	ecd, early childhood development, early childhood education, early learning, early child development, ece, early education, early stimulation, early development, eec, ecce, ccd, care for child development, preprimary, pre primary, preschool, pre school, grade 0, r class, 0 class, anganwadi, creche, early brain, early care, early child program, early learn, early year education, educa a tu hijo, emotion neurodevelopment, grade r, icds, infant center, infant development, infant education, infant friendly environment, infant friendly learn, infant friendly school, infant friendly space, infant learn, infant school, kce, kinder catch up education, mi primer empleo digno, pedakos, pre academic, pre k, prekindergarten, preparatory year, proyecto integral de desarrollo infantil, ready to learn, reception class, reception year, sesame street, sustainable development goal 4 2, tahderiyyah, year r
	General	psychological, safe space, ppe, literacy, child friendly space, child friendly space, language, child care, child development, child learn, drop in, physical well being, nursery, center based, play activity, psychologically, child education, comprehensive care, stimulation, caregiving, social interaction, caring for child, sesame, comprehensive development, motor skill, role play, infant care, nurturing care, physical development, learn and play, play based, play based, initial education, motor development, brain development, readiness program, satellite center, day center, verbal meaning, child and family center, child center, cognition, day care, daycare, physical exercise, play and learn, safe learn, behavior development, child and family attention center, child and family care center, child care education, child friendly learn, child to child, education game, education television, foundational learning, interactive learn, interactive play, learn habit, learn opportunity, learn potential, learn space, learn through play, number concept, nurturing learn, physical growth, pidi, play group, play interact, play school, playful learn, plaything, pre learn, pre read, preread, roleplay, supervised neighborhood play, verbal comprehension
Responsive	Alone	parental support, parent coaching, parental care, parental skills, parental

Care		sessions, parental involvement, parental awareness, parental training, family support, kangaroo, early stimulation, skin to skin, ahlan simsim,nurturing care, nurturing parenting, nurturing learning
	General	caregiving, maternal, mother, father, paternal, feeding, parent, parenting, parental, responsive, feed, child care, home visit, family size, responsive care
Security and safety	Alone	child protection, gbv child, child neglect, child maltreatment, child slave, gbv children, cpie, eccd
	General	psychosocial, abuse, violence against child, safe environment

10.0 ANNEX: LLM PROMPT AND EXAMPLE

To efficiently classify a large volume of projects for our training and validation datasets, the research team employed an LLM to assist with project review and labeling. We used Vertex AI-related Python packages to send thousands of project descriptions to Google's Gemini 2.5 flash-lite model.

For each project, we used the prompt presented below to query the Gemini model.

LLM prompt

You are an expert scientist specializing in ECD, focusing on the period from **pregnancy to five years of age**. Your task is to analyze project descriptions to determine if they are related to ECD, and, if so, to which of the five Nurturing Care Framework categories they belong. Use the World Health Organization's Nurturing Care Framework as your primary reference for definitions and scope.

The five categories are:
1. Good Health: Focuses on the physical and mental well-being of the child and caregiver. It's about monitoring conditions, using preventive services, and treating illnesses. Interventions include: Immunization for mothers and children; Support for caregivers' mental health; Antenatal and childbirth care; Prevention of preterm births; Essential care for newborn babies; Support for timely and appropriate careseeking for sick children

2. Adequate Nutrition: Ensuring children's proper nutrition from pregnancy to age five through support for maternal health, exclusive breastfeeding, safe and diverse complementary foods, and treatment for malnutrition. It's about providing essential nutrients and managing malnutrition. Interventions include: Support for breastfeeding and appropriate complementary feeding; Micronutrient supplementation; Management of moderate and severe malnutrition; Growth monitoring and promotion; Support for appropriate child feeding during illness

3. Early Learning: Supporting a child's cognitive, social, and emotional development from conception through daily, enriching interactions and play-based learning in a nurturing environment. Recognize concepts such as preschool, preprimary, ECD programs, early learning, early childhood development, or play-based learning activities, but also **identify other relevant activities or programs even if common keywords are not present**.

4. Security and Safety: Protecting children and pregnant mothers from harm, including violence, neglect, abuse, and environmental dangers. Consider projects that prevent injury, reduce abuse, or limit exposure to environmental hazards affecting young children. Interventions include: Birth registration; Social care services; Good higyiene practices; Provision of safe water and sanitation; Prevention of violence by intimate partners and in families; Provision of safe family and play spaces; Supporting family care and foster care over institutional care

5. Responsive Caregiving: Fostering a reciprocal and emotionally supportive relationship between caregivers and young children by noticing, understanding, and responding to their cues and needs. Look for descriptions of caregiver-child interactions, caregiver support programs, and initiatives promoting emotional and social well-being. Interventions include: Skin-to-skin contact; Kangaroo care; rooming-in for mothers and young children; Responsive feeding; Programs that encourage play and communication activities between a caregiver and a child; Support from family and community groups; Information and counselling on play and communication activities with children

For each project description, you must return a SINGLE JSON object, NOT a nested JSON! The JSON object will contain five keys, one for each of the categories listed above. The value for each key must be a numerical score from 0.0 to 1.0, where 0.0 means "no relation" and 1.0 means "strong, direct relation." You must also provide a brief justification of no more than 60 words, and an additional score 0.0 to 1.0 that the project is specifically related to children from pregnancy to five years of age.

Guidelines for Ambiguity:
- General Ambiguity: Some terms are ambiguous. When analyzing a project, look at the overall context and primary objective to determine the most relevant category.
- Parenting: Classify projects based on the specific type of parenting described. If it's about parenting skills for interaction, it's Responsive Caregiving. If it's about parenting practices for feeding, it's Adequate Nutrition.
- Infant and Young Child Feeding (IYCF): This can be both Adequate Nutrition (for food) and Responsive Caregiving (for feeding interaction). Classify both if the text supports it.
- Child Protection: This falls under Security and Safety only if it explicitly mentions prevention of violence, abuse, or neglect.

Justification Instructions:
- The justification must be a string of 60 words or less.
- The justification must cite the specific words or phrases from the text that directly support the classification (e.g., 'mentions x, y, z'). If the connection is inferred, state so clearly.
- If the score for a category is between 0.3 and 0.8, **the justification MUST explain why the score is ambiguous**. For example, 'mentions X, but as a complementary component' or 'the project focuses on older children, but an inferred connection exists with this age group.
- The justification should have a sentence specifying the reason for the children_0_5_confidence score. Like children under 5 mentioned, or project affects children in school and hence older than 5.

Age Confidence Instructions: For `children_0_5_confidence`:
- Assign 1.0 if the text explicitly mentions children 0–5, pregnancy, or related terms, like 'infants', 'neonatal', 'breastfeeding', 'antenatal'.
- Assign a high score of 0.75 if relevance to children 0–5 is strongly inferred from well-known early childhood activities, like early learning, preschool, preprimary, ECD programs, but no explicit age is stated.
- Assign a low score (0.0–0.2) if there is no explicit mention or strong contextual evidence of children 0–5.
- The justification must state the keywords from the text that led to the inferred score.

Strictly follow these instructions:
- Analyze the entire text as a single project, ignoring internal numbering or lists.
- Return a SINGLE JSON object, NOT a nested JSON.
- The JSON object must ALWAYS contain exactly seven keys: one for each of the five categories, a "justification" key, and a "children_0_5_confidence" key. Even if a category is not relevant, its key must be present with a score of 0.0.
- The values for all confidence scores must be floating-point numbers between 0.0 and 1.0.
- Do not include any text outside of the JSON object.

Here is the project description to analyze:
{project_description}

In response, the model returned a JSON object with seven entries: one for each of the five NCF categories (Good Health, Adequate Nutrition, Early Learning, Responsive Care, and Security and Safety), one to indicate the project's relevance to children aged 0-5, and a final entry providing a brief justification for the classification. This process allowed us to generate an initial, high-quality set of labeled projects, which we then exported to Excel for manual review by the research team. A few examples of the model's outputs is provided in the table below.

Good Health	Adeq. nutrition	Early Learn.	Sec. and safe.	Respon. Care	Children 0-5	Justification	Project description
0.8	1	0	0.5	0	1	The project focuses on improving health and reducing mortality/morbidity for young children, pregnant and	improvement of the health of young children pregnant women and breastfeeding women <SEP> is currently experiencing the worst drought for over 40 years currently it is estimated that 4 4 million

Good Health	Adeq. nutrition	Early Learn.	Sec. and safe.	Respon. Care	Children 0-5	Justification	Project description
						breastfeeding women. It mentions nutritional services, drinking water access, malnutrition diagnosis and treatment, therapeutic foods, medical equipment, and drugs. Security and safety are indirectly addressed through improved water access and waste collection.	people are in a situation of acute food insecurity and that more than a million young children and pregnant or lactating women suffer from malnutrition the medair project aims to reduce mortality and morbidity especially in children under the age of 5 and pregnant or breastfeeding women to do this medair wishes to permanently improve access to quality nutritional services and drinking water the organization will take place in 2 local health centers and set up a training program for the local population in order to diagnose and treat malnutrition in 11 isolated localities medair will constitute a 3 month old buffer stock of therapeutic foods ready to avoid shortages in localities supported and will buy medical equipment and drugs necessary to improve access to drinking water 15 water points will be rehabilitated in communities the local population will be trained in their maintenance and health facilities will be made available in nutrition centers and health centers a secure waste collection system will also be implemented
0.2	0.2	0.8	0	0.7	1	The project aims to increase caregivers' knowledge of nurturing care through a national campaign, strongly implying a focus on early learning and responsive caregiving. It mentions 'nurturing care' broadly, with some indirect links to health and nutrition. The justification reflects that 'early childhood development' and 'nurturing care' are directly mentioned.	development media international associates c i c <SEP> programme early childhood development description to increase caregivers knowledge of nurturing care through a national social and behavior change communication campaign in
0	0	0	1	0	1	The project aims to reduce diarrheal morbidity in children under 5 by increasing access to water, sanitation, and hygiene (WASH). This directly relates to preventing illness and ensuring a safe environment.	support to mercycorps to increase access to water sanitation and hygiene in urban centres of eastern bukavu goma and one other urban centre <SEP> to reduce the rate of diarrhoeal morbidity in children under 5 by increasing access to water sanitation and hygiene for 3 755 000 people in the