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Title:

**EarthForce (Ef) Valuation: An Economic Analysis of Earth's
Defense Resources, Infrastructure, and Their Pivotal Role in
Planetary Stability, Peace, and Unified Earth Responses**

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EarthForce (Ef) Valuation: An Economic Analysis of Earth's Defense Resources, Infrastructure, and Their Pivotal Role in Planetary Stability, Peace, and Unified Earth Responses

Abstract:

In this paper, we embark on a rigorous exploration of the EarthForce (Ef), integrating its value into the wider Earth Valuation formula. The primary objective is to provide a comprehensive economic valuation of the EarthForce, taking into account the myriad facets of military personnel, technology, infrastructure, and its pivotal roles in peacekeeping, sphere protection, and unified global responses.

Methodologically, I leverage insights from foundational defense economics texts, most notably the contributions by Hartley & Sandler (1995)[1] and the intricate examination of military expenditures in developing nations by Dunne & Perlo-Freeman (2003)[2]. Utilizing these benchmarks, we compute the value of military personnel by estimating the lifetime value of a soldier, encompassing not just their salary, but the holistic cost of their training, benefits, pensions, associated overheads, contributions to society, and other key metrics. The value of military assets and infrastructure is systematically assessed, referencing authoritative data sources like the SIPRI Military Expenditure Database (2022)[3].

Our results underscore the intangible value of EarthForce's contributions to peace and global stability, drawing upon the ripple effects of defense spending as highlighted by Brauer & Dunne (2013)[4]. Furthermore, we delve into the influence of technology on military valuation over time, as examined by Van Creveld (1989)[5].

In conclusion, the assignment of a valuation to EarthForce (Ef) offers a vital addition to the overarching Earth Valuation (EV) formula, paving the way for a more refined Earth Dollar (ED) Valuation. This valuation not only accounts for tangible assets but also recognizes the intrinsic worth of global peace, unity, collaborative defense and offense strategies.

Keywords: EarthForce, Earth Valuation, Defense Economics, Military Personnel Valuation, Peacekeeping Economics, Sphere Protection, Unified Global Responses, Earth Dollar Valuation, Asset Valuation, Military Infrastructure, Earth Infrastructure.

1. Introduction

With the contemporary shifts in geopolitics, socio-economic factors, and technological advancements, it is imperative to re-evaluate our understanding of global defense mechanisms and their broader implications on society. This paper delves into the innovative concept of EarthForce (Ef) which aligns closely with the wider discourse on Earth Valuation (EV). Earth Valuation, a novel approach, formulates valuations in each of Earth's spheres, seeking a holistic understanding of global values. Central to this is the EarthForce, akin to the military, serving as a crucial pivot in this broader schema of understanding.

1.1 Research Problem or Question

The quintessential query driving this research is: How can the EarthForce (Ef) be effectively valued within the scope of Earth's various spheres, and how does this valuation impact our broader economic paradigms?

1.2 Context and Motivation

Military valuation has always been a subject of keen interest in economic research, signified by pivotal works such as Hartley & Sandler's foundational insights into the economic aspects of global defense (Hartley, K., & Sandler, T., 1995)[1]. With the evolution of military roles in peacekeeping, unified global responses, and sphere protection, the need for an encompassing valuation formula becomes paramount. Such a formula not only broadens the horizons of defense economics but also encompasses the intricate ties between military expenditure, economic growth, and societal benefits (Brauer, J., & Dunne, J. P., 2013)[4].

1.3 Objectives and Hypotheses

Our primary objective is to derive an empirically backed formula to value EarthForce, considering both tangible assets like military personnel, infrastructure, and intangibles like contributions to peace. I hypothesize that EarthForce's valuation, when embedded within the Earth Valuation concept, offers transformative insights into global economic systems, transcending traditional defense economic theories.

Drawing from the rich tapestry of defense economics literature, our approach integrates the complexities of military expenditures in diverse contexts, from developing nations (Dunne, J. P., & Perlo-Freeman, S., 2003)[2] to the intricate nexus of arms trade and economic growth (Brauer, J., & Dunne, J. P., 2013)[4]. Moreover, the evolving paradigm of military technology and its implications, as traced from antiquity to the present (Van Creveld, M., 1989)[5], serves as a cornerstone in our analytical framework.

This research contributes to the growing field by offering an exhaustive valuation formula for EarthForce, contextualized within the larger Earth Valuation paradigm. As we progress, we will unravel the various components of this formula, drawing from authoritative sources such as SIPRI's annual yearbook (SIPRI, 2022)[3] to ensure robustness in our valuation metrics.

To guide our readers through this intricate landscape, subsequent sections will delineate our methodology, delve into data analysis, and culminate in discussions and conclusions, drawing synergies from defense economics, environmental science, and statistical modeling, with compelling data visualizations to elucidate our findings.

2. Literature Review

EarthForce (*Ef*): An Economic Perspective on Earth's Military Valuation

2.1 Introduction

The significance of military resources, both in terms of tangible and intangible assets, is fundamental to geopolitical considerations, and has always been of central importance to nations. The emergence of unified global challenges underscores the need for a broader perspective, encapsulating the responses, peacekeeping efforts, and a comprehensive understanding of military forces' value in the broader scope of the Earth's Scale. This review aims to integrate seminal works, empirical studies, and identify gaps in the literature that shape our understanding of the valuation of EarthForce (*Ef*).

2.2 Economic Insights into Global Defense

Hartley, K., & Sandler, T. (1995)[1] in their seminal work, Handbook of Defense Economics, provides comprehensive insights into the economic aspects of defense on a global scale. Their focus on the value of military personnel, assets, and infrastructure lays the groundwork for subsequent research on the economic theory and data crucial for EarthForce valuation.

2.3 Military Expenditure in Developing Contexts

Dunne, J. P., & Perlo-Freeman, S. (2003)[2] provide a focused examination of military expenditures in developing nations. Their insights into broader economic factors underlying defense valuation are particularly enlightening in understanding military valuation in varied economic contexts.

2.4 Implications of Defense Spending on Economic Growth

The connection between arms trade, defense expenditure, and their implications for economic growth is profoundly explored by Brauer, J., & Dunne, J. P. (2013).[4] Their research underscores the ripple effects of defense spending, implying that the contributions of the military might be discerned in broader economic realms beyond immediate defense.

2.5 Positive Externalities of Military Expenditure

In another pivotal study, Deger, S., & Sen, S. (1983)[6] delve into the fringe benefits of military expenditure on economic development, shedding light on the intangible value military spending brings to economies. This resonates with the third component of EarthForce's contributions to peace and economic stability.

2.6 Technology's Evolutionary Impact on Military Valuation

Through a historical lens, Van Creveld, M. (1989)[5] chronicles military technology's evolution, underscoring the changing roles and perceived value of human soldiers across different technological epochs. His work provides a broader context, emphasizing the value of technology and innovation in military settings and how it has redefined the worth of individual soldiers over time.

2.7 Quantifying Contemporary Data on Global Military Expenditure

The SIPRI Military Expenditure Database (2022)[3] stands as a primary source of contemporary data, detailing global defense expenditures and related metrics, arms transfers, and related insights. As an authoritative reference on global military spending, this database is instrumental in understanding and computing the monetary valuation of global military forces.

2.8 Current-Active-Duty vs EarthForce-Active-Duty

2.8.1 Introduction

The data acquired from the Stockholm International Peace Research Institute (SIPRI, 2022)[3] presents an approximated total of 20.4 million active military personnel worldwide in 2022. This figure translates to approximately 0.26% of the global population, estimated to be 7.95 billion in the same year of 2022. Additionally, The USA with a population of 333 million, and an active-duty of 1.4 million personnel alone accounted for only 0.42% of the USA population.

2.8.2 Important Notes

This dataset focuses exclusively on military personnel, excluding other paramilitary entities like police or border guards. Additionally, SIPRI's [3] database is not all-encompassing, lacking data from countries with unavailable or unreliable information. The mentioned figures might exhibit minor discrepancies; nonetheless, the provided estimate of 0.26% of the global population engaged in active military duty in 2022 remains reasonably accurate.

Figure-1

Earth's Population in 2022, with (active-duty) personnel compared to total population, on Earth			
Location	Population (2022)	Active-duty personnel (2022)	Percentage of active-duty personnel (2022)
Earth	7.95 (billion)	20.04 (million)	0.26%

Figure-2

[Data for the top 15 countries on earth by largest active military personnel is displayed below.]				
According to the SIPRI Military Expenditure Database, the Top 15 countries with the largest number of active military personnel in 2022 were:				
#	Country	Population (2022)	Active-duty personnel (2022)	Percentage of active-duty personnel compared to nation population (2022)
1	China	1,453,000,000	2,035,000	0.14%
2	India	1,403,000,000	1,460,350	0.10%
3	United States	332,403,650	1,395,350	0.42%
4	North Korea	25,809,822	1,280,000	4.96%
5	Russia	145,492,521	900,000	0.62%
6	South Korea	51,780,579	555,000	1.07%
7	Iran	86,946,466	523,000	0.60%
8	Pakistan	229,664,507	523,000	0.23%
9	Turkey	84,680,273	495,000	0.59%
10	Brazil	214,300,000	335,000	0.16%
11	Egypt	106,517,596	303,000	0.28%
12	Vietnam	98,204,900	273,000	0.28%
13	Indonesia	278,709,047	273,000	0.10%
14	Saudi Arabia	35,013,414	267,000	0.76%
15	France	67,928,425	249,000	0.37%

2.8.3 Narrative of EarthForce

EarthForce, established with a mandate focusing on the 18-21 age groups, aims to foster Earth-wide unity, extinguishing national military identities. It amalgamates eligible personnel, propelling a paradigm shift toward a unified Earth with a focus on the EarthForce three dimensions of Earth infrastructure, defense, and ecological preservation.

The projected EarthForce composition from the 18-21 age groups reveals approximately 478,353,856 million personnel, accounting for about 5.06% of the Earth's population between the years of 2050 and 2100, “[See Figure-3](#)”. These metrics underscore the magnitude and the potential impact of EarthForce in addressing global, continental, and local challenges, fostering a united Earth society.

Figure-3

Estimated Earth's Population in (2050-2100) total population		
Location	(summary) Earth Population (2050-2100)	(detailed) Earth Population (2050-2100)
Earth	9.45 (billion)	9,450,728,048

2.8.4 Comparison-A

EarthForce's initiative would mark a remarkable increment in active-duty personnel across the Earth to 5.06% (figure 4.1), and 478,353,856 million (figure 4.3), based on the total Earth's population between the years 2050-2100.

Figure (4), (4.1), (4.2), (4.3), and (4.4) active duty metrics are based on the mandated 18-21 age group, which implies an increase of 2,244.87 %, (figure 4.4), and an additional 457,953,856 million (figure 4) active duty personnel compared to the 20.4 million military active duty in the year (2022).

Figure-4: Data Explained

Unset

AGE BRACKET (18-21) COMPARISON

(Year 2022) Military global active duty population 0.26% compared to EarthForce (18-21) age group only global active duty population of 5.06% (figure 4.1) which is a 1846.15% increase (figure 4.2)

(Year 2022) Military global active duty population of 20.4 million compared to EarthForce (18-21) age group only global active duty population of 478,353,856 (figure 4.3) which is a 2244.87% increase (figure 4.4)

Figure-4.1: 2022 Military vs EarthForce Global Population Active-Duty

This figure shows the difference between the 2022 Military vs EarthForce Global Population % of Active-Duty. 100% = Total Global Population.

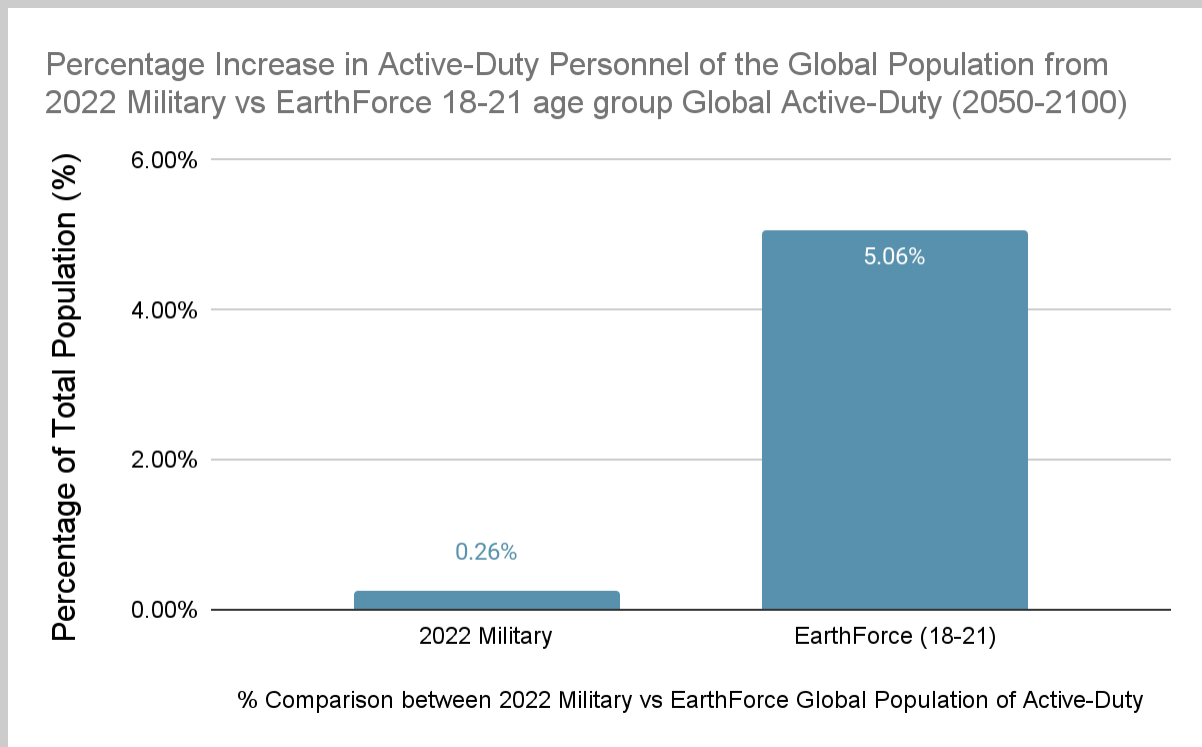


Figure-4.2: EarthForce Active-Duty increase % vs 2022 Military Active-Duty %

This figure shows the % change from (0.26% to 5.06%). 100% = Total Global Population.

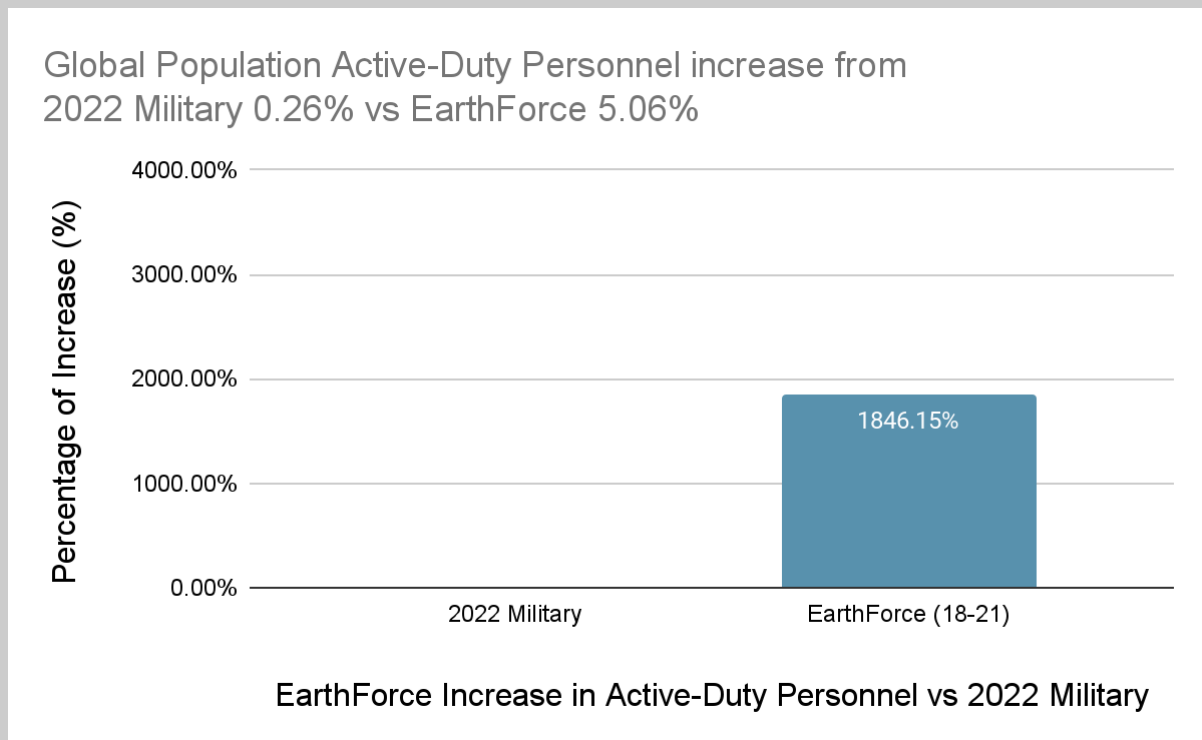


Figure-4.3 EarthForce Active-Duty Personnel Compared to 2022 Military

This figure shows the difference of Active-Duty Personnel of 2022 Military vs EarthForce

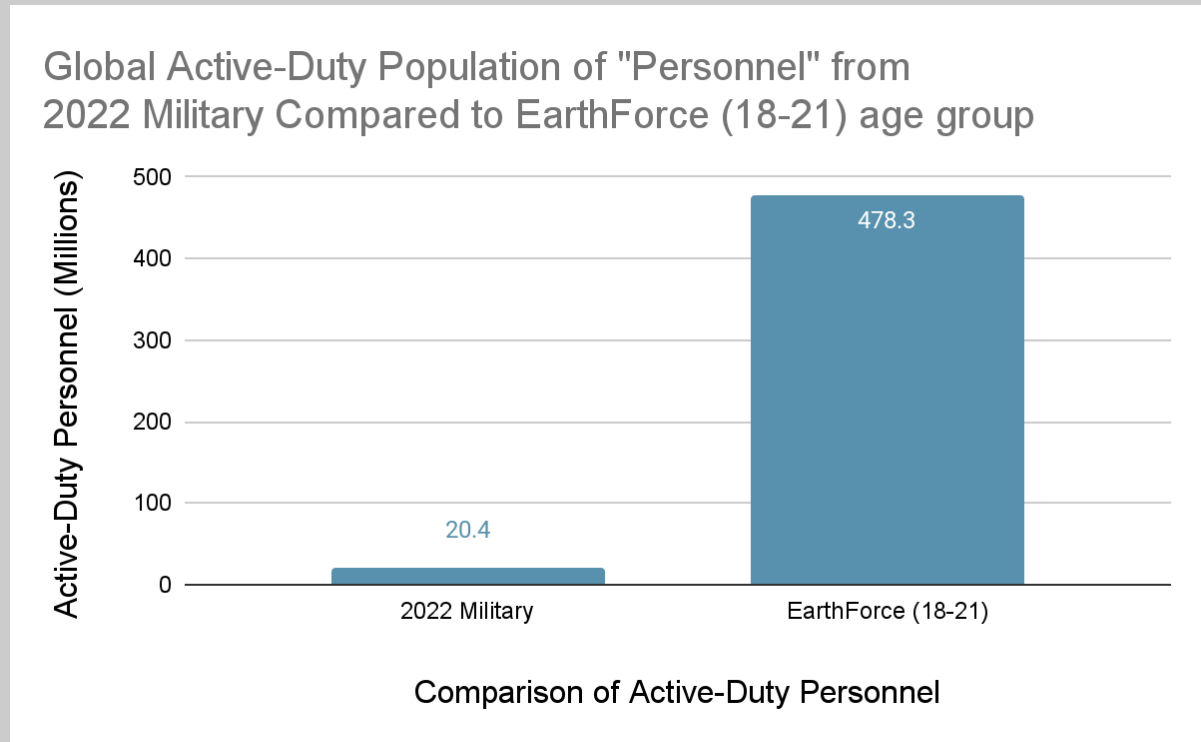
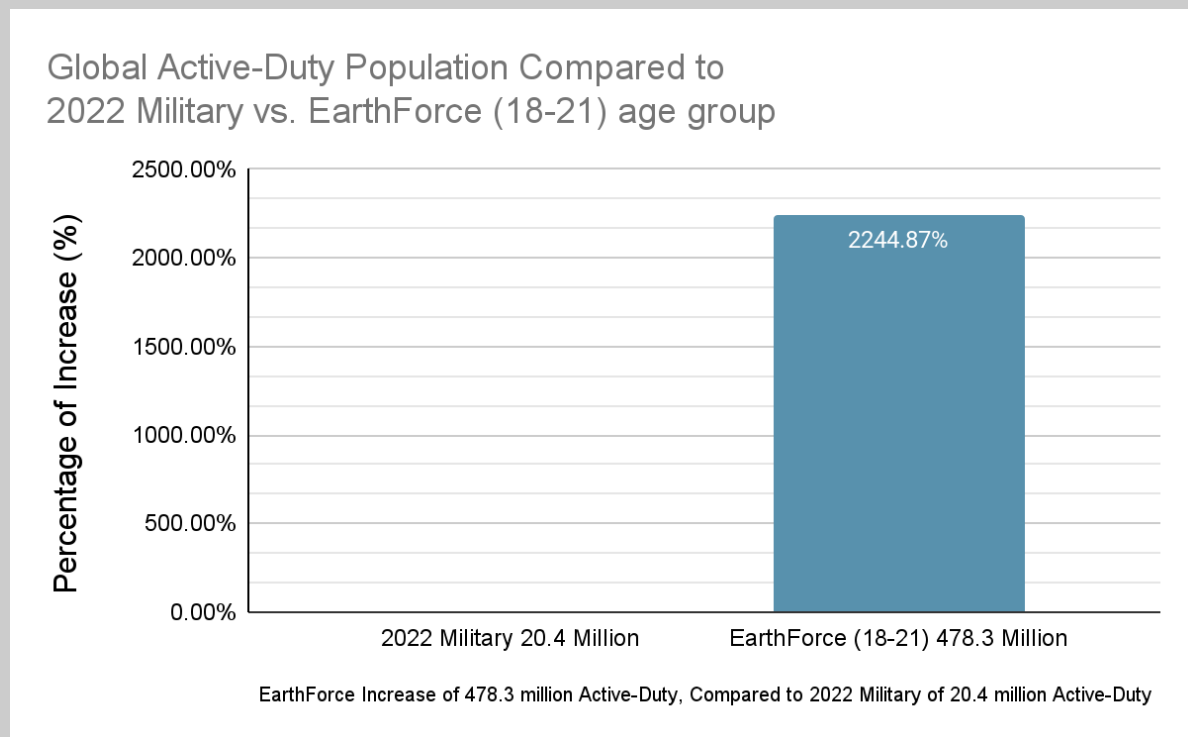


Figure-4.4: EarthForce Active-Duty Personnel increase % vs 2022 Military Active-Duty

This figure shows the % change from 20.4 million to 478.3 million personnel.



2.8.5 Comparison-B

The aforementioned comparison, **Comparison-A**, ([figure 4](#), [figure 4.1](#), [figure 4.2](#), [figure 4.3](#), [figure 4.4](#)), did not incorporate the 33-65 age groups of EarthForce. Integrating all (18-65) age groups, the cumulative EarthForce active-duty personnel is projected to reach approximately 610,529,005 million, ([figure-5.3](#)), which is around 6.46% of the total Earth's population between the years of 2050-2100, ([figure 5.1](#)), displaying an increase of 2792.79% ([figure 5](#)), and 590,129,005 million ([figure 5.4](#)), additional active-duty personnel compared to the 20.4 million military active duty in 2022.

Figure-5 Data Explained:

Unset

AGE BRACKET (18-65) COMPARISON

(Year 2022) Military global active duty population 0.26% compared to EarthForce (18-65) age group only active duty population of 6.46% ([figure 5.1](#)) which is a 2384.62% increase ([figure 5.2](#))

(Year 2022) Military global active duty population of 20.4 million compared to EarthForce (18-65) age group only active duty population of 610,529,005 ([figure 5.3](#)) which is a 2792.79% increase ([figure 5.4](#))

Figure-5.1: 2022 Military vs EarthForce Global Population Active-Duty

This figure shows the difference between the 2022 Military vs EarthForce Global Population % of Active-Duty. 100% = Total Global Population.

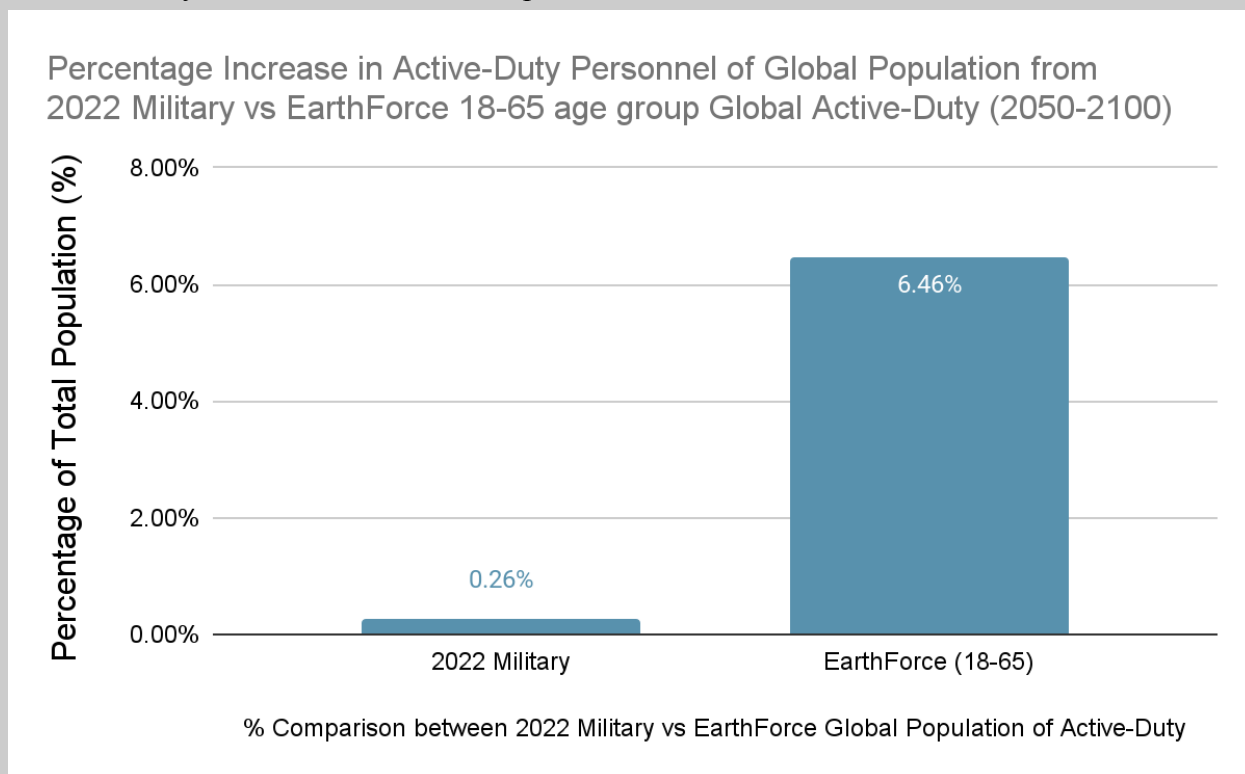


Figure-5.2: EarthForce Active-Duty % increase vs 2022 Military Active-Duty %

This figure shows the % change from 0.26% to 6.46%

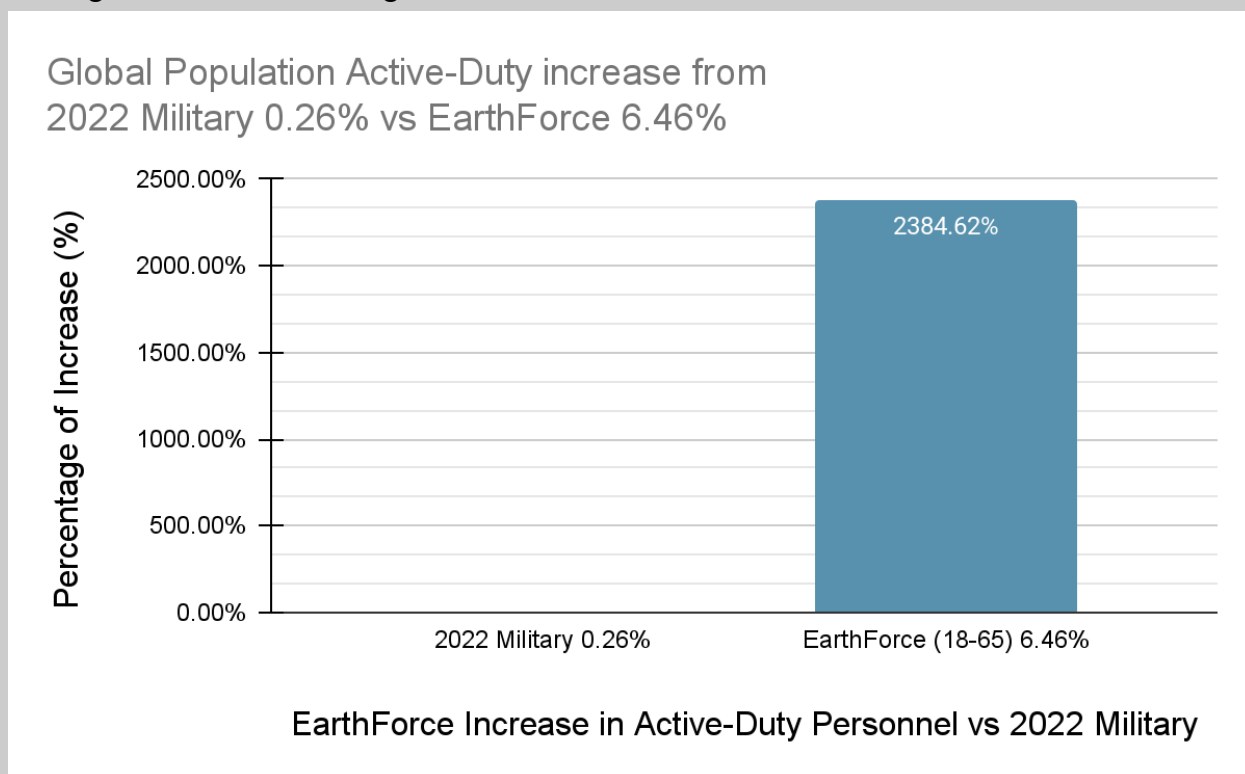


Figure-5.3: EarthForce Active-Duty Personnel Compared to 2022 Military

This figure shows the difference of Active-Duty Personnel of 2022 Military vs EarthForce

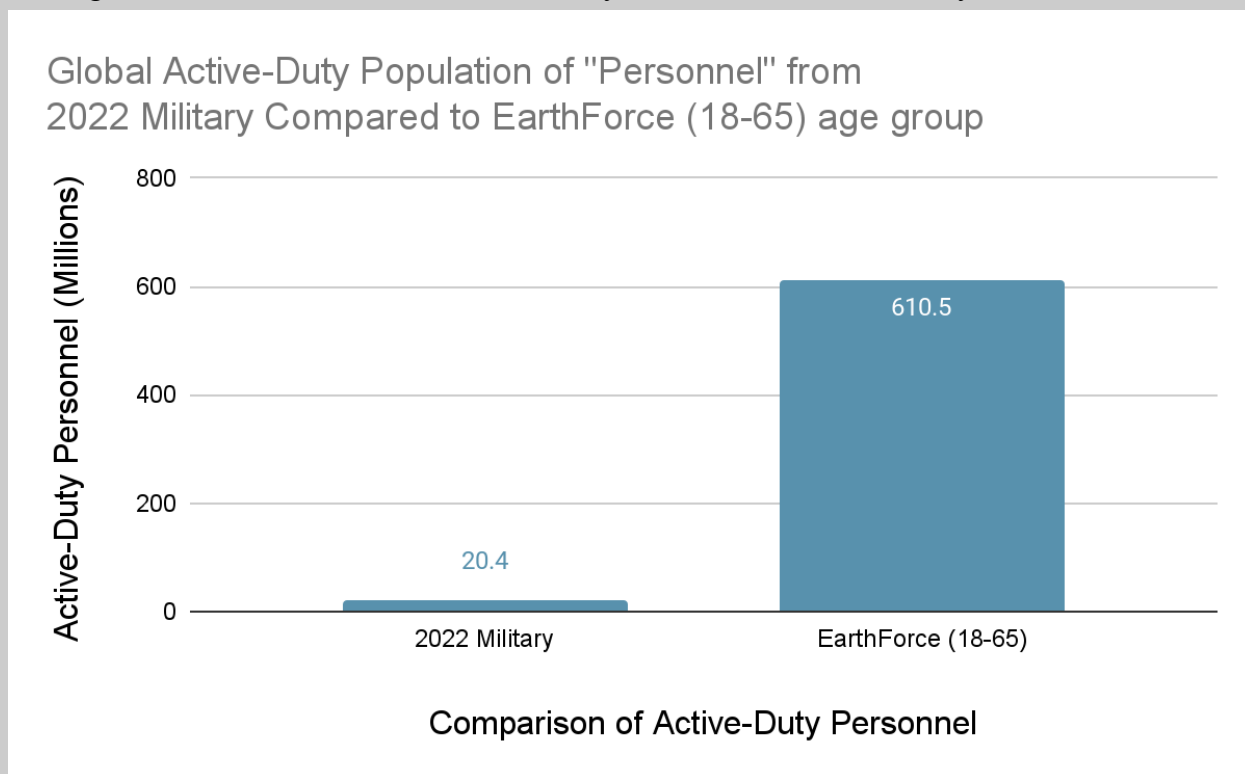
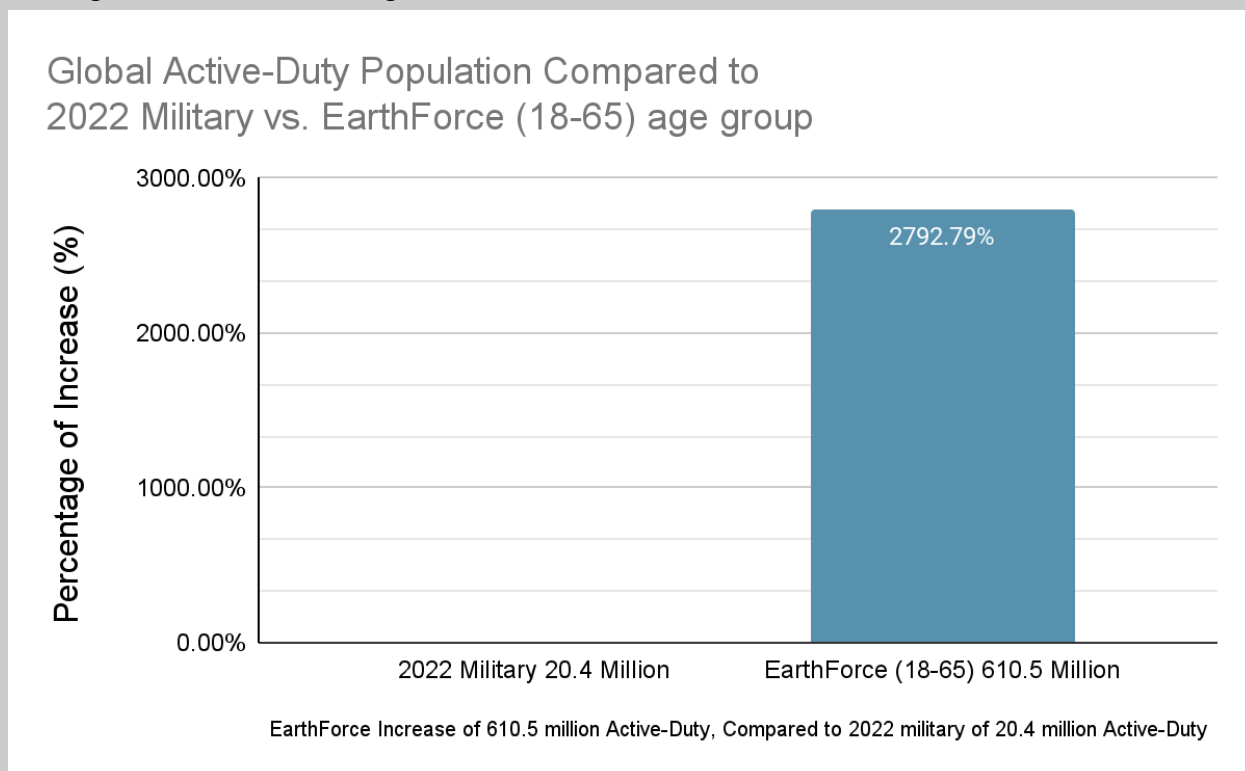


Figure-5.4: EarthForce Active-Duty Personnel increase % vs 2022 Military Active-Duty

This figure shows the % change from 20.4 million Personnel to 610.5 million.



2.8.6 Overview of both Comparison A, and Comparison-B

This section compares both 2022 Military, with the EarthForce (18-21), and (18-65) age groups.

Figure 6: Active-Duty Personnel as a Percentage of Total Population: 2022 Military vs EarthForce (2050-2100)

This figure compares the percentage of Total Population (%), and how many Personnel are Active-Duty based on the following: 2022 Military, EarthForce (18-21), and (18-65) age groups. 100% = Total Global Population.

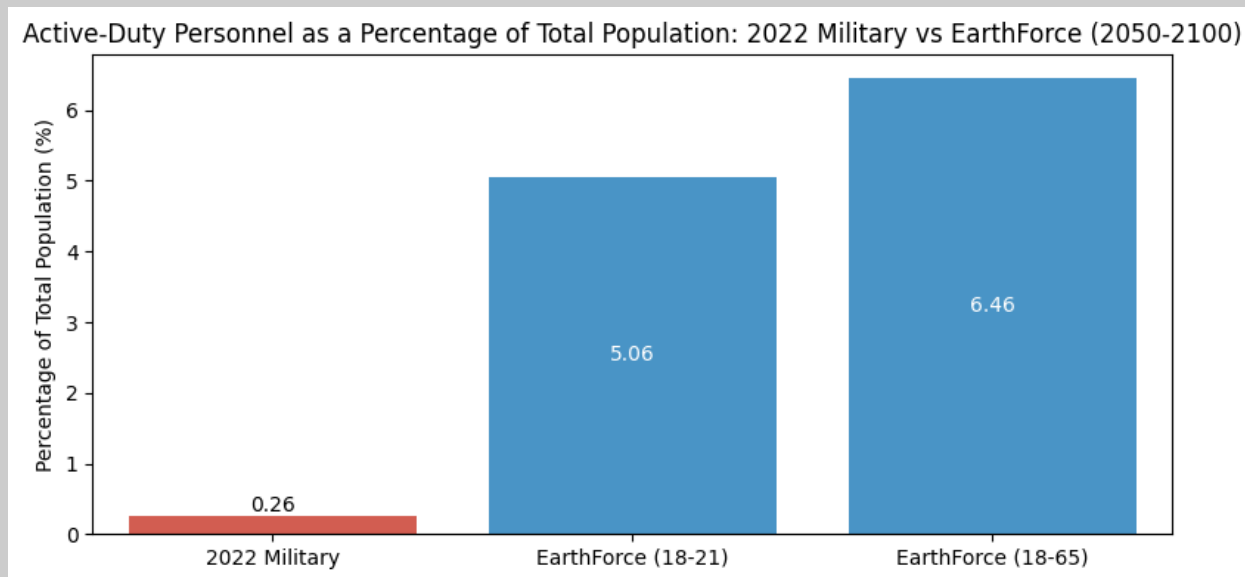


Figure 7: Global Population Active-Duty Personnel Increase from 2022 Military (0.26%) to EarthForce (5.06%), and (6.46%)

This figure shows the % change from (0.26% to 5.06%), and (0.26% to 6.46%).

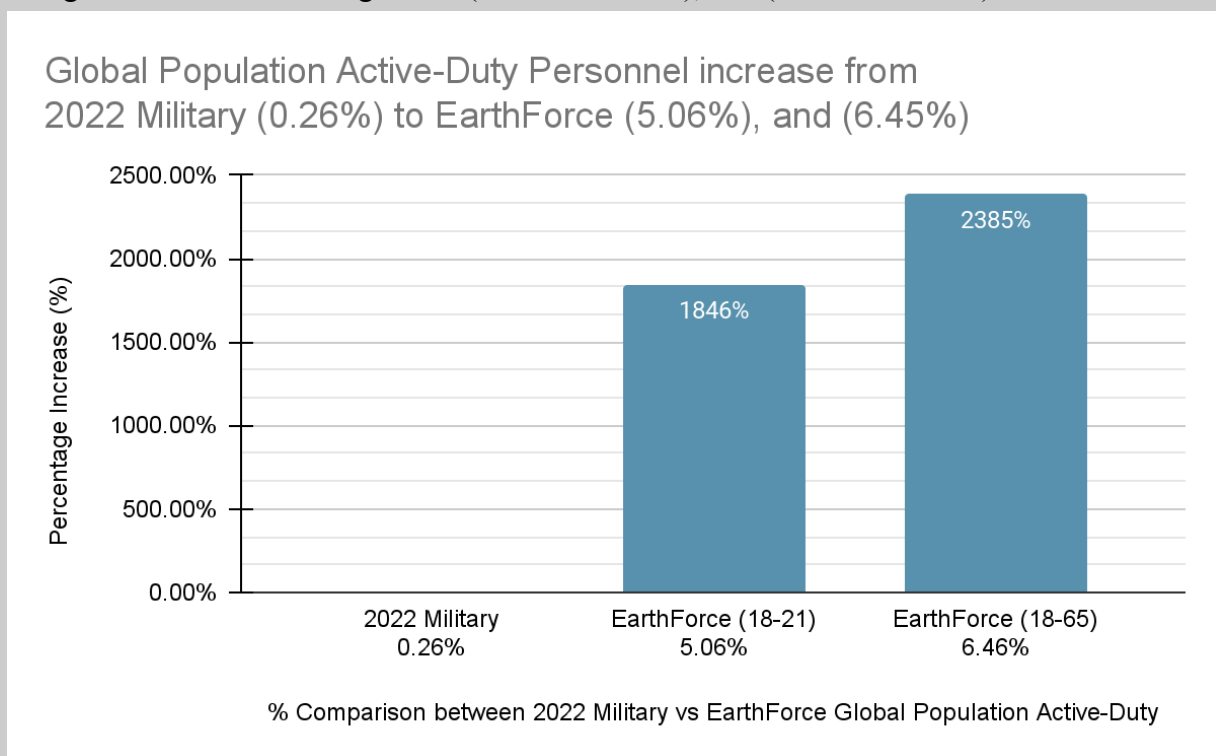
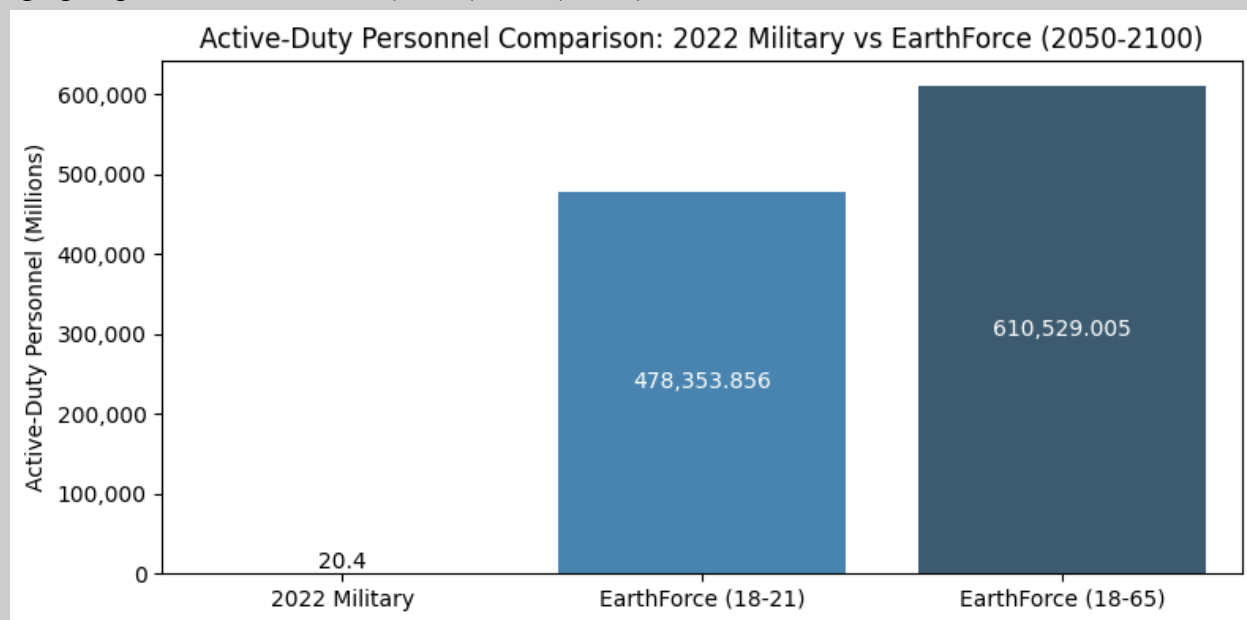


Figure 8: Active-Duty Personnel Comparison: 2022 Military vs EarthForce (2050-2100)

This figure compares the Global Total Active-Duty Personnel of the 2022 Military, between both age groups of the EarthForce (18-21), and (18-65).



2.8.7 Comparative Synthesis

The synthesis of global active-duty personnel metrics from (2022 Military), and the projected EarthForce active-duty personnel in the period (2050-2100) illustrates a profound shift in global military paradigms. The augmenting active-duty personnel in EarthForce emphasizes the transition from fragmented military endeavors to a coherent, unified approach to global peace and development.

2.8.8 Supporting Data

The dataset represented in (Table-2) in section 3.3.1.5.2.2 within the main document substantiates the projections and comparisons made within this section, illustrating the diverse demographic dimensions of EarthForce personnel.

2.8.9 Comments

Refer to (Table-2) in section 3.3.1.5.2.2 in the main document for more comprehensive data and metrics relating to EarthForce's active-duty personnel.

2.8.10 Conclusion

The value proposition of EarthForce (Ef) is interlinked with its readiness to contribute to Earth's well-being. It presents a new paradigm where the challenges humanity faces seem minuscule, with approximately 610,529,005 million EarthForce personnel hyper-focused on a unified approach to a three-dimensional branch for humanity's betterment, security, and Earth preservation.

2.8.11 Final Remarks

The valuation of EarthForce brings forth complex narratives of unity, readiness, and a harmonious approach to tackling Earth's challenges. It symbolizes the transition to a more coherent and integrated Earth society, underscored by shared values and collective endeavors, fueled by an ultraprecise blend of tangible and intangible benefits contributing to Earthwide peace.

2.9 Identified Gaps and Future Research Avenues

2.9.1 Amalgamation of EarthForce Benefits

While the comprehensive literature has afforded significant insights into diverse aspects of military valuation, from various angles, a multifaceted gap persists, notably in the amalgamation of tangible and intangible benefits of EarthForce and its consequential contribution to Earthwide peace. EarthForce's unique role in fostering unified Earth responses and its paramount impact on the global economic, cultural, and societal landscapes form the nexus of these gaps.

2.9.2 Analysis of Intangible Contributions

The meticulous documentation available focuses primarily on the quantifiable aspects, such as defense expenditure and military assets. However, an in-depth analysis of the valuation of the intangible contributions and benefits remains lacking, notably EarthForce's role in maintaining peace, conflict prevention, territorial integrity defense, facilitating unified responses, humanitarian undertakings, and fostering ecosystem contributions remains nebulous. The broader academic discourse has predominantly bifurcated these components, yielding a fragmented exploration of their synergetic implications.

2.9.3 Examination of EarthForce Formulas

The nuanced interplay between EarthForce's three dimensions and its internal formulas, namely MPV (Military Personnel Value), MAIV (Military Assets and Infrastructure Value), PEC (Peacekeeping & Ecosystem Contribution), and UERV (Unified Earth Response Value), require meticulous examination. The intricate topography and taxonomy encapsulating these dimensions and formulas need a refined analytical framework to elucidate their final valuations and implicit interdependencies.

2.9.4 Clarification on Three-Dimensional Enrollment

A clearer comprehension of EarthForce's three-dimensional enrollment, especially within "Grade-School" programs and mandated "Active Duty" qualifications, and disqualifiers, remains elusive on the operational infrastructure of an earth-wide enrollment. The audit of such unified processes across diverse cultures and societies is paramount to understanding EarthForce's progression and its overarching impacts on Earth's inhabitants from entry to exit of active duty members.

2.9.5 Audit of Operational Framework and Roles

In light of EarthForce's expansive mandate and its repercussions on various aspects of Earth, a rigorous audit of the components and the taxonomy responsible for each is indispensable. This encompasses not only the operational framework but also the intersecting roles and impacts across different societal, environmental, and economic strata.

2.9.6 Future Research Papers

Below are three potential future papers that are imperative to construct the blueprint for the EarthForce society to become a fully engaging operation. These papers encompass areas that are classified and others that are open-source, serving as the engine for a formal (SCA) Special Collection Activities to assemble such a monumental task.

- **Operation EarthForce:** This research seeks to aggregate all pre-existing militaries into a unified command center, envisioning a singularity approach to Earth military operation and cooperation.
- **Operation EarthForce-grade-school:** It is a culmination of an investigation into the amalgamation of all educational centers to be unified earth-wide, aiming to establish a EarthForce educational standard.
- **Operation EarthForce-mandate:** The exploration of the implications and ramifications of the mandated service within the three branches between ages 18-21.

*“It is urged that humanity be open to the inevitable EarthForce changes to occur,
be it soon, to adapt and align with the upcoming transformation.”
In EarthForce We Trust—Jeno Joseph Giordano*

2.9.6 Interlinking Forthcoming Research Papers

Interlinking with other forthcoming research papers is crucial for a holistic understanding of EarthForce's role within (EV), and all the Earth's Autonomous Union of Spheres. (Lithosphere, Pedosphere, Cryosphere, Hydrosphere, Biosphere, Anthroposphere, Atmosphere, Magnetosphere, and Humans). While these intersections are not explicitly available in this EarthForce Valuation (EFV) research paper, subsequent publications, due by the end of 2023, will delve into the intricate relationships between Earth's spheres of influence and the Earth Monetary Supply (EMS). These, in conjunction with the forthcoming Earth Constitution and EarthCode, while pending in publication, due to the order of process carefully planned of its release, will provide a comprehensive overview of EarthForce's annual budgets and its three dimensions, thus enriching the foundational knowledge encompassed in the Earth Founding Documents (EFD).

2.9.7 Integration of Internal Research Papers

Lastly, there's a pronounced absence of literature focusing on the holistic integration of EarthForce's contributions to global peace and the broader socio-economic implications thereof. The integration of internal research papers detailing the interlinkages between Earth's Autonomous Union of Spheres within Earth Valuations and the Earth Monetary Supply (EMS) will play a pivotal role in defining the financial contours of the Earth Dollar (ED) and the

operations of the Earth Bank (EB). These synergistic understandings will further elucidate the intricate link between EarthForce (EF) and its multifaceted dimensions, offering a more coherent picture of its alignment with Earth's overarching objectives and values.

Conclusively, this outlined research avenue aims to bridge the identified gaps and contribute significantly to the growing corpus of knowledge on EarthForce and its myriad implications, paving the way for more integrative and synergistic approaches in future studies.

2.10 Situating the Present Research in the Academic Milieu

My research endeavors to bridge these identified gaps. By synthesizing economic, strategic, technological, and sociopolitical dimensions, I aim to offer a nuanced, holistic valuation of EarthForce (Ef). In addressing the previously uncharted territories of intangible military contributions and their broader ramifications, I hope to contribute significantly to the academic discourse, enriching the understanding of Earth's military forces' comprehensive value.

2.11 Conclusion

The comprehensive valuation of EarthForce (Ef) requires a synthesis of economic, strategic, technological, and sociopolitical perspectives. While the existing literature, as reviewed herein, offers foundational and advanced insights into various facets of military valuation, the quest for a more comprehensive, integrated understanding continues. Through my integrated approach, I aim to contribute meaningfully to this dynamic academic landscape.

3. Theoretical Framework of EarthForce (Ef) Valuation within the Earth Valuation (EV)

3.1 Introduction

The Earth Valuation (EV) equation provides a holistic summation of Earth's total value across multiple dimensions. One of the pivotal elements within this equation is the EarthForce (Ef) which represents Earth's combined military strength, infrastructure, and its role in global peacekeeping and sphere protection. Through this theoretical framework, we delve deeper into the mathematics and modeling of (Ef) to encapsulate both the tangible and intangible facets of EarthForce rooted in its contributions to the overall (EV).

3.2 EarthForce (Ef) Valuation Model

$$Ef = \text{EarthForce}$$

$\sum Ef$: Value of Earth's military resources (personnel, technology, infrastructure) + EarthForce's role in peacekeeping, sphere protection, unified global responses.

Given the complex nature of the military's role and its vast array of assets, the (Ef) component can be further decomposed into four primary factors:

$$\sum Ef = MPV + MAIV + PEC + UERV$$

3.2.1 Where

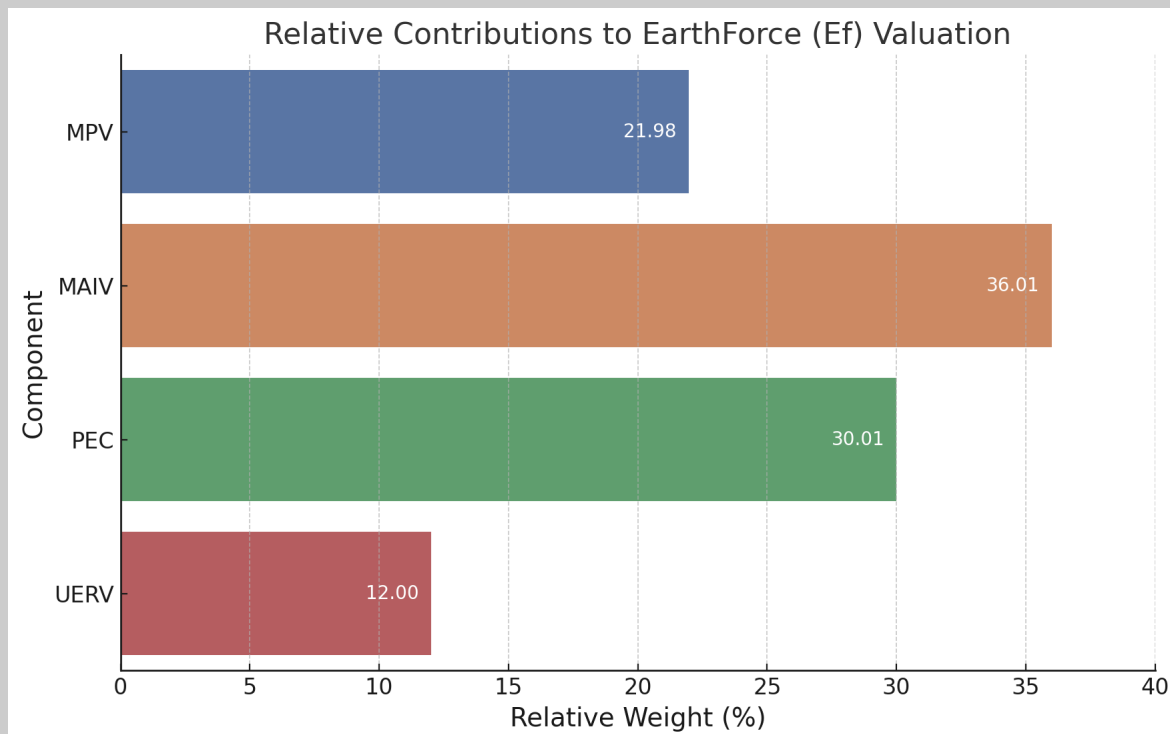
- **MPV** (Military Personnel Value): Total value associated with all military personnel.
- **MAIV** (Military Assets and Infrastructure Value): Cumulative value of all military assets, including technology, infrastructure, and weaponry.
- **PEC** (Peacekeeping & Ecosystem Contribution): Value derived from EarthForce's contribution to maintaining peace, protecting the eight spheres, and fostering unified Earth responses.
- **UERV** (Unified Earth Response Value): Value of EarthForce's overall Diplomatic efficacy, strength and deterrent value of a unified Earth military response.

3.2.2 Visual Chart

Relative Contributions to EarthForce (Ef) Valuation

This bar chart represents the relative contributions of MPV (Military Personnel Value), MAIV (Military Assets and Infrastructure Value), PEC (Peacekeeping & Ecosystem Contribution), and UERV (Unified Earth Response Value) to the overall $\sum Ef$.

Each bar's length is proportional to its relative weight in $\sum Ef$, and the numerical values are annotated at the end of each bar for clarity.



The relative contributions of each component to the overall valuation of EarthForce are as follows:

- **MPV** (Military Personnel Value): Accounts for approximately 21.98% of the total EarthForce valuation. This category includes personnel salaries, training, and benefits.
- **MAIV** (Military Assets and Infrastructure Value): Constitutes about 36.01% of the total valuation and covers infrastructure like bases and training facilities, as well as technological assets such as weaponry, AI systems, and space assets.
- **PEC** (Peacekeeping & Ecosystem Contribution): Encompasses approximately 30.01% of EarthForce's valuation, focusing on sphere protection initiatives and peacekeeping operations.
- **UERV** (Unified Earth Response Value): Represents approximately 12.00% of EarthForce's valuation, covering unified responses to threats and challenges.

The figure and these percentages serve to elucidate the multifaceted nature of EarthForce and its varied but interconnected roles within the larger Earth Valuation framework.

3.3 Breakdown of Mathematical Modeling of (Ef) Components

3.3.1 Military Personnel Value (MPV)

3.3.1.1 Formula

$$MPV = N \times V$$

3.3.1.2 Where

- MPV = Number of military personnel * Average lifetime value of a soldier
- N = Total number of military personnel globally.
- V = Average lifetime value of an EarthForce soldier, considering training costs, salaries, benefits, and other associated expenses.

3.3.1.3 Description

This component captures the comprehensive value of an EarthForce soldier, accounting not just for the salary, but the cost of training, benefits, pensions, potential societal contributions, expertise, and experience. See [Tables \(1-14\)](#), [Legend](#) For a more comprehensive source of N and how the population was calculated. MPV metrics are based on the [Earth Constitution](#), and [EarthCode](#) being active; these are internal databases of future publication research papers outlining the legal framework for Earth, which enforces mandated systems of enrollment for

sections of age groups pertaining to humans. This enables consistency in active duty EarthForce enrollment. Furthermore, the EarthForce is more than just a soldier of defense combat; it comprises three dimensions instead of one. Therefore, humans enrolling in the EarthForce can pursue other branches within the EarthForce that have nothing to do with defense but focus on leadership, ecology and preservation, technology advancements, earth infrastructure, and more.

3.3.1.4 Visual Chart

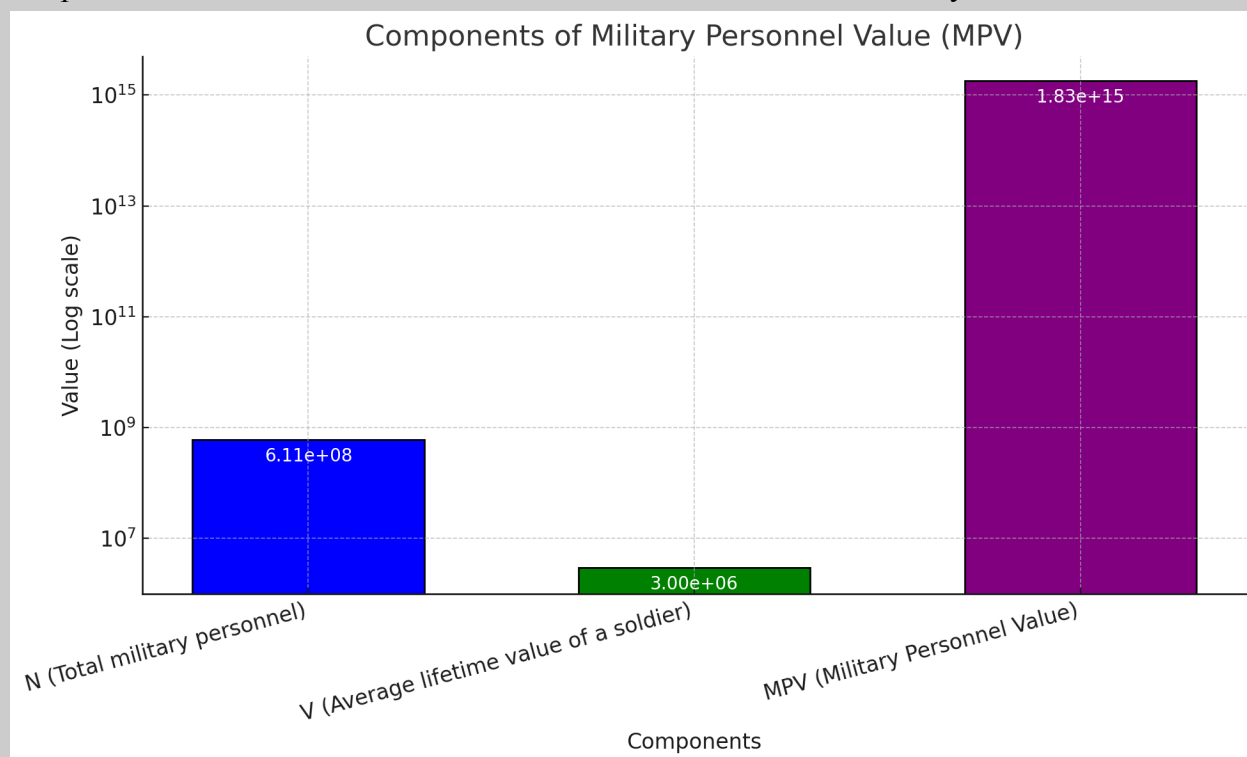
Components of Military Personnel Value (MPV)

This bar chart illustrates the components that go into calculating the Military Personnel Value (MPV), based on the formula $MPV = N \times V$

The bars represent the values for N (Total military personnel) and V (Average lifetime value of a soldier). The calculated MPV is annotated above the chart.

- The blue bar represents N (Total military personnel), which is 610.529 million people, or $6.10529E+08$
- The green bar represents V (Average lifetime value of a soldier), which is 3.00 million USD, or $3.00E+06$
- The purple bar represents the calculated MPV (Military Personnel Value), which is 1.83 quadrillion USD, or $1.83159E+15$

The chart uses a logarithmic scale on the y-axis to better visualize the differences between the components. The numerical values are annotated above each bar for clarity.



The life expectancy of EarthForce active service age groups, often denoted by \mathbf{N}

Mathematically, \mathbf{N} could be represented as:

$\mathbf{N} = (\text{age group 18 through 21}) + (\text{age group 22 through 32}) + (\text{age group 33 through 43}) + (\text{age group 44 through 54}) + (\text{age group 55 through 65})$.

The lifetime value of a EarthForce soldier/personnel, often denoted by \mathbf{V}

Mathematically, \mathbf{V} could be represented as:

$\mathbf{V} = \text{Salary} + \text{Training Costs} + \text{Benefits} + \text{Pensions} + \text{Potential Societal Contributions} + \text{Expertise and Experience} + \text{Cohesion_Unification} + \text{Global Humanity Orientation} + \text{Mental Health and Well-being} + \text{Grooming Generations} + \text{Educational Advancements, Skill} + \text{Innovation and Technological}$

The MPV (Military Personnel Value) is 1.83 quadrillion USD and \mathbf{N} (Total military personnel globally) is 610.529 million people. \mathbf{V} is calculated as:

$$\mathbf{V} = \frac{\mathbf{N}}{MPV}$$

The total number of EarthForce's three-dimension branches of active duty personnel, often denoted by \mathbf{N} , is an age group measure that takes into account various generations and broadens the functionality of EarthForce, allowing more branches to be intertwined into societal roles. This further provides EarthForce with greater integration into society.

Note: Age groups are clustered, in the [Tables \(1-14\)](#) and the Legend to showcase the population percentage impacts of grouping select ages within a statistical analysis based on an enforceable mandate. This illustrates how EarthForce can operate as an Earth-wide operation for the betterment of society.

3.3.1.5 (MPV) Taxonomy

3.3.1.5.1 (V) Taxonomy explained

Below covers, high-level framework taxonomy, of **V** key metrics that require further research, but have been used to derive the established valuation of an EarthForce soldier/personnel. **V** is a comprehensive measure that takes into account various factors:

1. **Salary:** The average annual salary of a soldier.
2. **Training Costs:** The costs incurred to train a soldier.
3. **Benefits:** Includes healthcare, housing allowances, and other perks.
4. **Pensions:** Retirement benefits.
5. **Potential Societal Contributions:** The value of a soldier's potential contributions to society, which might include community service, leadership, and through their training and orientation, are predisposed towards positive societal behaviors. Their decreased tendencies towards violence and drug use, combined with an increased inclination towards nature conservation, add significant societal value.
6. **Expertise and Experience:** The value of the skills, knowledge, and experience that a soldier gains, which can be beneficial in other roles.
7. **Cohesion / Unification:** The value of the ability of an EarthForce soldier to foster cohesion and unification among diverse groups enhances the overall effectiveness and unity of the force. This intangible value is crucial in ensuring coordinated and harmonised operations that increase happiness, purpose, and impact.
8. **Global Humanity Orientation:** The training and ethos of EarthForce steer soldiers away from narrow nationalism, adding value by promoting a broader sense of global responsibility and humanity.
9. **Mental Health and Well-being:** The value of the holistic training and support structures within EarthForce contribute to reduced mental health crises among soldiers. This not only ensures their well-being but also translates to increased operational efficiency and reduced healthcare costs.
10. **Grooming Generations:** The value of offering leadership grooming programs for grade-school early childhood ages, preparing children for their desired roles in society. Which enables special fast track programs for youth that seek adult specialties roles in society.
11. **Educational Advancements, Skill:** The Value of accelerated learning programs for age groups 12-16 and 18-21, enabling them to attain degrees in advanced skills, studies and field-training knowledge in Earth Infrastructure operations. This educational advantage translates higher value in operations roles, and prepares them for roles in managing large-scale industries worldwide, especially in managing Earth's critical infrastructures.
12. **Innovation and Technological:** The Value of EarthForce soldiers, given their exposure to a vast pool of young minds and cutting-edge technologies, are at the forefront of driving innovations. Their involvement in advanced labs and research initiatives adds significant value to EarthForce's technological prowess and its ability to safeguard humanity's interests.

3.3.1.5.2 (N) Taxonomy explained

Below covers Tables (1-14), which is the taxonomy of the N population groups.

“Note, this section is informative and lengthy from the standard format of this paper, if you want to skip to the next section see section 3.3.2 Military Assets and Infrastructure Value (MAIV).”

3.3.1.5.2 Tables (1-14), Legend			
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3.3.1.5.2.1 Table-1 Earth's Population by Select Age Group

Table-1 Description

The below chart is an academic projection, based on data sources, as population metrics all contain various unknown factors for the future, no population metric is stationary, and variables alter the course of history, and this data is not reflecting other age groups such as 97+. However in light of the unknown, the % points allotted to each age group throughout the following population tables, provides deep insight into future formulas that can be used to determine future projections in EarthForce personnel impact analysis.

Population is based on 9,450,728,04 Billion Humans. A UN project figure to reach by 2050-2100 The Population Impact, based on EarthForce Policies of Earth-Wide service, will be provided below in the following Tables (2-14). But not limited to future related papers that will expand on this pre-existing foundation of evidence.

(Table-1) Earth's Population by Select Age Group						
Age Groups	Earth's Population Size			% of Total Population		
	Male	Female	Male & Female	Male & Female	Male	Female
0-6	402,192,134	381,123,098	783,315,232	8.29%	4.26%	4.03%
7-9	392,562,714	371,013,811	763,576,525	8.08%	4.15%	3.93%
10-11	382,223,658	361,436,060	743,659,718	7.87%	4.04%	3.82%
12-15	371,947,712	351,443,672	723,391,384	7.65%	3.94%	3.72%
16-17	361,918,979	341,443,672	703,362,651	7.44%	3.83%	3.61%
18-21	351,918,979	331,443,672	683,362,651	7.23%	3.72%	3.51%
22-32	539,831,898	515,890,943	1,055,722,841	11.17%	5.71%	5.46%
33-43	516,831,898	492,890,943	1,009,722,841	10.68%	5.47%	5.22%
44-54	493,831,898	470,890,943	964,722,841	10.21%	5.23%	4.98%
55-65	470,831,898	449,890,943	920,722,841	9.74%	4.98%	4.76%
66-75	348,831,898	333,890,943	682,722,841	7.22%	3.69%	3.53%
76-86	150,831,898	142,890,943	293,722,841	3.11%	1.60%	1.51%
87-97	58,831,898	63,890,943	122,722,841	1.30%	0.62%	0.68%
Total	4,842,587,462	4,608,140,586	9,450,728,048	100.00%	51.24%	48.76%

Data was sourced from the United Nations, Department of Economic and Social Affairs, Population Division (2022). [\[11\]](#)

3.3.1.5.2.2 Table-2 EarthForce, Metrics of "18-65" (Active Duty) Personnel at all times.

Table-2 Description

Based on my analysis of incorporating the EarthForce mandates and using internal tooling with pragmatic regression models regarding retention over the course of re-enlistments from the ages of 18-65, below are the key findings for the EarthForce (Active-Duty) Service Personnel at all times. If the Mandate Policies were enforced and the EarthForce adopted the three dimensions within its branches, the results showcase that there would be 610 million personnel within the EarthForce. This is based on assumptions that can position the EarthForce to have enough personnel to tackle any challenge the Earth might face.

“In a time where, our earth is facing pressing needs for personnel, instruments, etc, The EarthForce, is positioned more in favour of resolving key issues that exceed military capabilities by integrating within infrastructure, generational moulding, ecology preservation and innovation to deploy millions of our personnel on continental issues.” Jeno Joseph Giordano

(Table-2) EarthForce, Metrics of "18-65" (Active Duty) Personnel at all times.						
Age Groups	Metrics			% of Total Population (2050-2100)		
	Male & Female	Male	Female	Male & Female	Male	Female
18-21	478,353,856	246,343,285	232,010,570	5.06%	2.61%	2.45%
22-32	119,588,464	61,585,821	58,002,643	1.27%	0.65%	0.61%
33-43	11,958,846	6,158,582	5,800,264	0.13%	0.07%	0.06%
44-54	597,942	307,929	290,013	0.01%	0.0033%	0.0031%
55-65	29,897	15,396	14,501	0.000316%	0.000163%	0.000153%
Total Active EarthForce Personnel			Total Active EarthForce Personnel, of Earth's Total population			
610,529,005			6.46%			

3.3.1.5.2.3 Table-3 EarthForce, Mandated_Select Age Group

Table-3 Description

The table below (Table-3) lists a column named "Mandated," which serves as the hypothetical binary (Yes or No) requirement for select age groups. Ages 7-9 and 12-15 are mandated to enroll in the EarthForce "Grade-School" programs. These programs focus on leadership, branch dimension activities, and societal university-level ecosystems to tailor the younger generation to roles in society that interest the children. Additionally, there is a mandated enrollment in "Active-Duty" for ages 18-21. This is not a "Grade-School" program but an active-duty role in EarthForce. After completing mandated service, personnel are eligible to not enroll in continued EarthForce service but may opt to re-enroll if they desire to continue service.

(Table-3) EarthForce, Mandated_Select Age Group			
Mandated	Age Groups	Male	Female
No	0-6	No	No
Yes	7-9	Yes	Yes
No	10-11	No	No
Yes	12-15	Yes	Yes
No	16-17	Yes	Yes
Yes	18-21	No	No
No	22-32	No	No
No	33-43	No	No
No	44-54	No	No
No	55-65	No	No

3.3.1.5.2.4 Table-4 EarthForce, Mandated, Grade-School_Enrollment

Table-4 Description

Currently, around the Earth, ages 3 through 18 attend school, at least in the context of normalized grade school methodologies.

The below (Table-4) metrics are taking statistical optics derived from UN data source [11], and “*EarthForce Database*,” showing how EarthForce can implement additional dimensions of branches within the younger years of childhood to increase the coherence of humanity within collaborative EarthForce grade school universities, versus traditional cultural competition. This positions the younger generations to have an equal chance at understanding how Earth and humanity work, without the limitations of local budgets, but to have access to state-of-the-art instruments and learning teamwork and their trades from across various races across the world on how younger generations learn and work together. This brings about an upbringing in global and continental learning, versus local learning methods that have time and time again left underwhelming results. This stands as a starting point for a new epoch for a new methodology of humanity—one built on the foundation of one Earth family and how the kids can learn trades that position them for on-the-job training at a young age, obtaining functional degrees or skills certifications as soon as 15-18 years old, thereby preparing them for society instead of abandoning them in society.

(Table-4) EarthForce, Mandated, Grade-School_Enrollment						
World's Population Size				% of Total Population		
Age Groups	Male	Female	Male & Female	Male & Female	Male	Female
7-9	392,562,714	371,013,811	763,576,525	8.08%	4.15%	3.93%
12-15	371,947,712	351,443,672	723,391,384	7.65%	3.94%	3.72%
Population Metrics						
Age Groups	Population % Not Eligible	Population % Eligible	Population # Not Eligible Males	Population # Not Eligible Females	Population # Eligible Males	Population # Eligible Females
7-9	30%	70%	117,768,814	111,304,143	274,793,900	259,709,668
12-15	30%	70%	111,584,314	105,433,102	260,363,398	246,010,570

3.3.1.5.2.5 Table-5 EarthForce, Mandated, “18-21” Active Duty_Enrollment

Table-5 Description

Based on ([Table-1](#)) Earth’s Population by Select Age Group.

The following (Table-5) metrics are taking into consideration that 30% of the population of the ages of 18-21 will not be eligible to enroll in EarthForce due to Disqualifications of (Disabilities, Mental illness, and Obesity). “See [Factors for Disqualification](#)”

Factors for Disqualification

1. Disability: Physical impairments can range from mobility issues to sensory disabilities.
2. Mental Illness: Severe mental illnesses (SMIs) like schizophrenia, bipolar disorders, etc.
3. Overweight/Obesity: Excessive weight can be a disqualifying factor, especially for traditional defense roles, and other related Earth Infrastructure roles.

(Table-5) is the Mandated enrollment in the EarthForce first age group required to enroll into (Active Duty) within one of the three branches of the EarthForce. This group of 18-21 serves as the (earth-wide) pillar of operations of EarthForce optics. As the largest portion of the EarthForce. This mandated service will consist of four years. The personnel have the option to select between the three dimensions branches of interest.

(Table-5) EarthForce, Mandated, “18-21” Active Duty_Enrollment						
World's Population Size				% of Total Population		
Age Groups	Male	Female	Male & Female	Male & Female	Male	Female
18-21	351,918,979	331,443,672	683,362,651	7.23%	3.72%	3.51%
EarthForce Active Duty Personnel				% of Total Population		
Population % Eligible	Population # Eligible Males	Population # Eligible Females	Population # Eligible Male & Females	Male & Female	Male	Female
70%	246,343,285	232,010,570	478,353,856	5.06%	2.61%	2.45%
EarthForce Unqualified Personnel				% of Total Population		
Population % Not Eligible	Population # Not Eligible Males	Population # Not Eligible Females	Population # Not Eligible Males & Females	Male & Female	Male	Female
30%	105,575,694	99,433,102	205,008,795	2.17%	1.12%	1.05%

3.3.1.5.2.6 Table-6 EarthForce, Completed Mandated, "18-21" Active Duty_Renewal for Re-Enrollment

Table-6 Description

Below is (Table-6), the age group 18-21, that completed their mandated service, and is up for renewal, to either re-enlist or not re-enlist. The retention is 10%, and the departure is 90%, and is subject to change based on further required research. However this serves as a factor of measurements that can be expanded based on the policies of the EarthForce and its infrastructure and perks that it offers EarthForce (active duty) personnel to re-enlist. And reasons why EarthForce personnel have a bigger impact with the EarthForce than society on a global average.

Based on my analysis, 119 million personnel are projected to re-enlist back into the EarthForce, for continued service. These #'s are hypothetical, and based on assumption projections, of internal instruments used to entice personnel in desiring to re-enlist. Related "Earth Founding Documents" will be published by Q2 of 2024, showcasing support data of these claims. To further solidify the framework for these tools to become less hypothetical, more reasonable and feasible. Personnel, re-enlisting, at this stage, are mostly for EarthForce career oriented personnel that seek to establish themselves in leadership positions, or make impact within the dimensions of branches. Because the EarthForce would have instruments of unique magnitude for the ecosystem to emerge from that enable personnel to expand their passions of Earth Infrastructure, Innovation, Ecology preservation, with capabilities not seen in the public or private sector.

(Table-6) EarthForce, Completed Mandated, "18-21" Active Duty_Renewal for Re-Enrollment						
Age Groups		18-21				
EarthForce_Re-enlisting Active Duty Personnel				% of Total Population		
Active Duty % Re-enlisting	Population # Eligible Males	Population # Eligible Females	Population # Eligible Male & Females	Male & Female	Male	Female
10%	61,585,821	58,002,643	119,588,464	1.27%	0.65%	0.61%
EarthForce_Not Re-enlisting Active Duty Personnel				% of Total Population		
Active Duty % Not Re-enlisting	Active Duty # Not Re-enlisting Males	Active Duty # Not Re-enlisting Females	Active Duty # Not Re-enlisting Males & Females	Male & Female	Male	Female
90%	221,708,957	208,809,513	430,518,470	4.56%	2.35%	2.21%

Note: The re-enlisting numbers will have some in-accuracy due to active duty members (passing, illness, and other unforeseen events that normal humans undergo) through the course of their service.

3.3.1.5.2.7 Table-7 EarthForce, Un-Mandated, "22-32" Re-enlistment Active Duty_Enrollment

Table-7 Description

Below, (Table-7), is based on the Re-enlistment of the 18-21 age group, towards the 22-32 age group. For the sake of simplicity this (Table-7), showcases a ten year overview of the age group and shows the total enrollment, and active duty over the course of ten years. These findings are based on a 10% re-enlistment from (Table-6).

Table-7 Color Legend Notes

Re-enlistments within the Green highlight, is pulling from the age group (18-21) that is re-enlisting to the (22-32) service, over the course of 10 years. Red highlight, is pulling from the age group (18-21) that is not re-enlisting to the (22-32) service. Orange highlight is pulled from (Table-1) data. Yellow highlight is the Age group of service being involved.

(Table-7) EarthForce, Un-Mandated, "22-32" Re-enlistment Active Duty_Enrollment						
World's Population Size				% of Total Population		
Age Groups	Male	Female	Male & Female	Male & Female	Male	Female
22-32	539,831,898	515,890,943	1,055,722,841	11.17%	5.71%	5.46%
EarthForce Active Duty Personnel				% of Total Population		
Active Duty % Re-enlisting	Population # Eligible Males	Population # Eligible Females	Population # Eligible Male & Females	Male & Female	Male	Female
10%	61,585,821	58,002,643	119,588,464	1.27%	0.65%	0.61%
EarthForce Unqualified Personnel				% of Total Population		
Population % Not Eligible	Population # Not Eligible Males	Population # Not Eligible Females	Population # Not Eligible Males & Females	Male & Female	Male	Female
40%	215,932,759	206,356,377	422,289,136	4.47%	2.28%	2.18%

3.3.1.5.2.8 Table-8 EarthForce, Completed Un-Mandated, "22-32" Active Duty_Renewal for Re-Enrollment

Table-8 Description

Below, in (Table 8), is the age group 22-32 that completed their unmandated service and is up for renewal to either re-enlist for a second term, 33-43, or not re-enlist. The retention is 10%, and the departure rate is 90%; this is subject to change based on further required research. However, this serves as a measurement factor that can be expanded based on the policies of EarthForce and the infrastructure and perks it offers to EarthForce active-duty personnel to re-enlist. It also serves to illustrate the reasons why EarthForce personnel have a more significant impact within EarthForce than within society on a global average.

If the age group 22-32 re-enlists for a second term in EarthForce, options may consist of four years, six years, and ten-year options, allowing personnel to choose between the EarthForce's three-dimensional branches of interest.

(Table-8) EarthForce, Completed Un-Mandated, "22-32" Active Duty_Renewal for Re-Enrollment						
Age Groups	22-32					
EarthForce_Re-enlisting Active Duty Personnel				% of Total Population		
Active Duty % Re-enlisting	Population # Eligible Males	Population # Eligible Females	Population # Eligible Male & Females	Male & Female	Male	Female
10%	6,158,582	5,800,264	11,958,846	0.13%	0.07%	0.06%
EarthForce_Not Re-enlisting Active Duty Personnel				% of Total Population		
Active Duty % Not Re-enlisting	Active Duty # Not Re-enlisting Males	Active Duty # Not Re-enlisting Females	Active Duty # Not Re-enlisting Male & Females	Male & Female	Male	Female
90%	55,427,239	52,202,378	107,629,618	1.14%	0.59%	0.55%

Note: The 90% not re-enlisting is from the already existing 22-32 Age Group that was active service. And is not pulling from the world population.

3.3.1.5.2.9 Table-9 EarthForce, Un-Mandated, "33-43" Re-enlistment Active Duty_Enrollment

Table-9 Description

Below, (Table-9), is based on the Re-enlistment of the 22-32 age group, towards the 33-43 age group. For the sake of simplicity this (Table-9), showcases a ten year overview of the age group and shows the total enrollment, and active duty over the course of ten years. These findings are based on a 10% re-enlistment from (Table-8).

Table-9 Color Legend Notes

Re-enlistments within the Green highlight, is pulling from the age group (22-32) that is re-enlisting to the (33-43) service, over the course of 10 years. Red highlight, is pulling from the age group (22-32) that is not re-enlisting to the (33-43) service. Orange highlight is pulled from (Table-1) data. Yellow highlight is the Age group of service being involved.

(Table-9) EarthForce, Un-Mandated, "33-43" Re-enlistment Active Duty_Enrollment						
World's Population Size				% of Total Population		
Age Groups	Male	Female	Male & Female	Male & Female	Male	Female
33-43	516,831,898	492,890,943	1,009,722,841	10.68%	5.47%	5.22%
EarthForce Active Duty Personnel				% of Total Population		
Active Duty % Re-enlisting	Population # Eligible Males	Population # Eligible Females	Population # Eligible Male & Females	Male & Female	Male	Female
5%	6,158,582	5,800,264	11,958,846	0.13%	0.07%	0.06%
EarthForce Unqualified Personnel				% of Total Population		
Population % Not Eligible	Population # Not Eligible Males	Population # Not Eligible Females	Population # Not Eligible Males & Females	Male & Female	Male	Female
45%	232,574,354	221,800,924	454,375,278	4.81%	2.46%	2.35%

3.3.1.5.2.10 Table-10 EarthForce, Completed Un-Mandated, "33-43" Active Duty_Renewal for Re-Enrollment

Table-10 Description

Below, in (Table 10), is the age group 33-43 that completed their unmandated service and is up for renewal to either re-enlist for a third term, 44-54, or not re-enlist. The retention is 10%, and the departure rate is 90%; this is subject to change based on further required research. However, this serves as a measurement factor that can be expanded based on the policies of EarthForce and the infrastructure and perks it offers to EarthForce active-duty personnel to re-enlist. It also serves to illustrate the reasons why EarthForce personnel have a more significant impact within EarthForce than within society on a global average.

If the age group 33-43 re-enlists for a third term in EarthForce, options may consist of four years, six years, and ten-year options, allowing personnel to choose between the EarthForce's three-dimensional branches of interest.

(Table-10) EarthForce, Completed Un-Mandated, "33-43" Active Duty_Renewal for Re-Enrollment						
Age Groups		33-43				
EarthForce_Re-enlisting Active Duty Personnel				% of Total Population		
Active Duty % Re-enlisting	Population # Eligible Males	Population # Eligible Females	Population # Eligible Male & Females	Male & Female	Male	Female
5%	307,929	290,013	597,942	0.01%	0.0033%	0.0031%
EarthForce_Not Re-enlisting Active Duty Personnel				% of Total Population		
Active Duty % Not Re-enlisting	Active Duty # Not Re-enlisting Males	Active Duty # Not Re-enlisting Females	Active Duty # Not Re-enlisting Males & Females	Male & Female	Male	Female
90%	5,542,724	5,220,238	10,762,962	0.11%	0.059%	0.055%

3.3.1.5.2.11 Table-11 EarthForce, Un-Mandated, "44-54" Re-enlistment Active Duty_Enrollment

Table-11 Description

Below, (Table-11), is based on the Re-enlistment of the 33-43 age group, towards the 44-54 age group. For the sake of simplicity this (Table-11), showcases a ten year overview of the age group and shows the total enrollment, and active duty over the course of ten years. These findings are based on a 10% re-enlistment from (Table-10).

Table-11 Color Legend Notes

Re-enlistments within the Green highlight, is pulling from the age group (33-43) that is re-enlisting to the (44-54) service, over the course of 10 years. Red highlight, is pulling from the age group (33-43) that is not re-enlisting to the (44-54) service. Orange highlight is pulled from (Table-1) data. Yellow highlight is the Age group of service being involved.

(Table-11) EarthForce, Un-Mandated, "44-54" Re-enlistment Active Duty_Enrollment						
World's Population Size				% of Total Population		
Age Groups	Male	Female	Male & Female	Male & Female	Male	Female
44-54	493,831,898	470,890,943	964,722,841	10.21%	5.23%	4.98%
EarthForce Active Duty Personnel				% of Total Population		
Active Duty % Re-enlisting	Population # Eligible Males	Population # Eligible Females	Population # Eligible Male & Females	Male & Female	Male	Female
5%	307,929	290,013	597,942	0.01%	0.0033%	0.0031%
EarthForce Unqualified Personnel				% of Total Population		
Population % Not Eligible	Population # Not Eligible Males	Population # Not Eligible Females	Population # Not Eligible Males & Females	Male & Female	Male	Female
50%	246,915,949	235,445,472	482,361,421	5.10%	2.61%	2.49%

3.3.1.5.2.12 Table-12 EarthForce, Completed Un-Mandated, "44-54"Active Duty_Renewal for Re-Enrollment

Table-12 Description

Below, in (Table 12), is the age group 44-54 that completed their unmandated service and is up for renewal to either re-enlist for a fourth term, 55-65, or not re-enlist. The retention is 10%, and the departure rate is 90%; this is subject to change based on further required research. However, this serves as a measurement factor that can be expanded based on the policies of EarthForce and the infrastructure and perks it offers to EarthForce active-duty personnel to re-enlist. It also serves to illustrate the reasons why EarthForce personnel have a more significant impact within EarthForce than within society on a global average.

If the age group 44-54 re-enlists for a fourth term in EarthForce, options may consist of four years, six years, and ten-year options, allowing personnel to choose between the EarthForce's three-dimensional branches of interest.

(Table-12) EarthForce, Completed Un-Mandated, "44-54"Active Duty_Renewal for Re-Enrollment						
Age Groups		44-54				
EarthForce_Re-enlisting Active Duty Personnel				% of Total Population		
Active Duty % Re-enlisting	Population # Eligible Males	Population # Eligible Females	Population # Eligible Male & Females	Male & Female	Male	Female
5%	15,396	14,501	29,897	0.00032%	0.00016%	0.00015%
EarthForce_Not Re-enlisting Active Duty Personnel				% of Total Population		
Active Duty % Not Re-enlisting	Active Duty # Not Re-enlisting Males	Active Duty # Not Re-enlisting Females	Active Duty # Not Re-enlisting Males & Females	Male & Female	Male	Female
90%	277,136	261,012	538,148	0.006%	0.0029%	0.0028%

3.3.1.5.2.13 Table-13 EarthForce, Un-Mandated, "55-65" Re-enlistment Active Duty_Enrollment

Table-13 Description

Below, (Table-13), is based on the Re-enlistment of the 44-54 age group, towards the 55-65 age group. For the sake of simplicity this (Table-13), showcases a ten year overview of the age group and shows the total enrollment, and active duty over the course of ten years. These findings are based on a 10% re-enlistment from (Table-12).

Table-13 Color Legend Notes

Re-enlistments within the Green highlight, is pulling from the age group (44-54) that is re-enlisting to the (55-65) service, over the course of 10 years. Red highlight, is pulling from the age group (44-54) that is not re-enlisting to the (55-65) service. Orange highlight is pulled from (Table-1) data. Yellow highlight is the Age group of service being involved.

(Table-13) EarthForce, Un-Mandated, "55-65" Re-enlistment Active Duty_Enrollment						
World's Population Size				% of Total Population		
Age Groups	Male	Female	Male & Female	Male & Female	Male	Female
55-65	470,831,898	449,890,943	920,722,841	9.74%	4.98%	4.76%
EarthForce Active Duty Personnel				% of Total Population		
Active Duty % Re-enlisting	Population # Eligible Males	Population # Eligible Females	Population # Eligible Male & Females	Male & Female	Male	Female
5%	15,396	14,501	29,897	0.000316%	0.000163%	0.000153%
EarthForce Unqualified Personnel				% of Total Population		
Population % Not Eligible	Population # Not Eligible Males	Population # Not Eligible Females	Population # Not Eligible Males & Females	Male & Female	Male	Female
55%	258,957,544	247,440,019	506,397,563	5.36%	2.74%	2.62%

3.3.1.5.2.14 Table-14 EarthForce, Completed Un-Mandated, "55-65" Active Duty_Renewal for Re-Enrollment

Table-14 Description

Below, in (Table 14), is the age group 55-65 that completed their unmandated service and is not renewable. There is no fifth term, beyond 65 to re-enlist. The retention is 0%, and the departure rate is 100%; this is subject to change based on further required research. However, this serves as a measurement factor that can be expanded based on the policies of EarthForce and the infrastructure and perks it offers to EarthForce five term active-duty personnel to honourable departure.

(Table-14) EarthForce, Completed Un-Mandated, "55-65" Active Duty_Renewal for Re-Enrollment						
Age Groups		55-65				
EarthForce_Re-enlisting Active Duty Personnel				% of Total Population		
Active Duty % Re-enlisting	Population # Eligible Males	Population # Eligible Females	Population # Eligible Male & Females	Male & Female	Male	Female
0%	0	0	0	0.00%	0.00%	0.00%
EarthForce_Not Re-enlisting Active Duty Personnel				% of Total Population		
Active Duty % Not Re-enlisting	Active Duty # Not Re-enlisting Males	Active Duty # Not Re-enlisting Females	Active Duty # Not Re-enlisting Males & Females	Male & Female	Male	Female
100%	15,396	14,501	29,897	0.000316%	0.000163%	0.000153%

THIS MARKS THE END OF N SERVICE FOR ALL EARTHFORCE, MEMBERS.

3.3.2 Military Assets and Infrastructure Value (MAIV)

3.3.2.1 Formula

$$MAIV = At + Ai + Aw$$

3.3.2.2 Where

- At = Value of technology, including advanced defense systems, cyber capabilities, and intelligence tools.
- Ai = Value of infrastructure, from military bases to training facilities.
- Aw = Value of weaponry, from land vehicles to naval ships, aircraft, and space instruments.

3.3.2.3 Description

This encompasses the valuation of military land, buildings, vehicles, weapons, and other equipment. Additionally, the strategic value of uniquely placed assets, secret defense mechanisms, intelligence agencies, and cyber warfare resources are considered.

3.3.2.4 Visual Chart

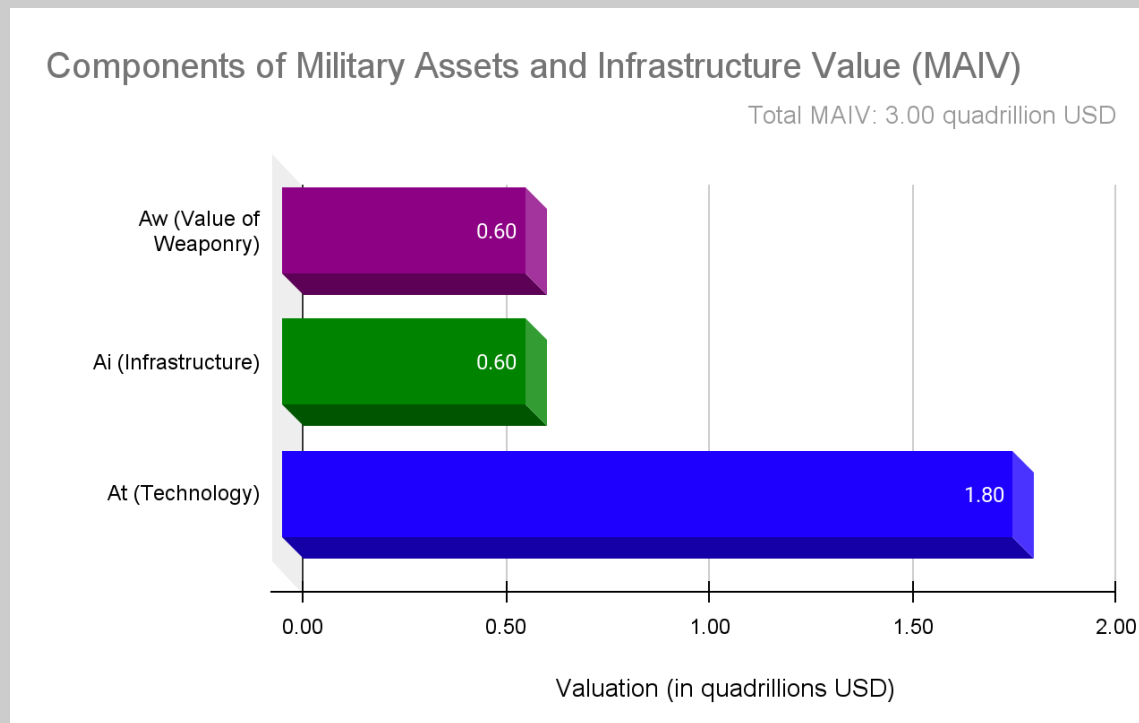
Components of Military Assets and Infrastructure Value ($MAIV$)

This bar chart illustrates the components that contribute to the Military Assets and Infrastructure Value ($MAIV$), as described by the formula $MAIV = At + Ai + Aw$.

The bars represent the values for At (Value of technology), Ai (Value of infrastructure), and Aw (Value of weaponry). The calculated ($MAIV$) is annotated above the chart.

- At (Value of Technology) is valued at 1.80 quadrillion USD.
- Ai (Value of Infrastructure), after sharing value with Aw , is now valued at 0.60 quadrillion USD.
- Aw (Value of Weaponry) is valued at 0.60 quadrillion USD, which is half of the original Ai value.

The total (*MAIV*) is annotated below the chart and sums up to 3.00 quadrillion USD.



3.3.2.5 (MAIV) Taxonomy

Below is a taxonomy framework used to establish the valuations, whereas internal databases are not curated enough to present publication of a full audit, which would require a specific paper due to its presentation requirements, to expand on its supporting data. Further research is required to establish a publicized audit of this framework taxonomy. For full comprehension, existing military analysis across all defense departments across all nations would have to undergo an audit to establish a real-time database.

3.3.2.5.1 Technology (At):

At encompasses technological assets and capabilities which include but are not limited to:

3.3.2.5.1.1 *Advanced Defense Systems:*

- Missile Defense Systems
- Electronic Warfare Systems
- Satellite Communication Systems

3.3.2.5.1.2 *Cyber Capabilities:*

- Cybersecurity Infrastructure
- Cyber Warfare Capabilities
- Information Warfare Systems

3.3.2.5.1.3 *Intelligence Tools:*

- Surveillance Systems
- Intelligence Analysis Software
- Reconnaissance Equipment

3.3.2.5.2 **Infrastructure (Ai):**

Ai represents the infrastructural assets of the military, consisting of:

3.3.2.5.2.1 *Military Bases:*

- Land Bases
- Naval Bases
- Air Bases
- Space Bases

3.3.2.5.2.2 *Training Facilities:*

- Combat Training Centers
- Simulation Centers
- Academic Military Institutions

3.3.2.5.3 **Weaponry (Aw):**

Aw constitutes the armaments and combat equipment, segmented as follows:

3.3.2.5.3.1 *Land Vehicles:*

- Tanks
- Armored Personnel Carriers
- Artillery Systems

3.3.2.5.3.2 *Naval Ships:*

- Aircraft Carriers
- Submarines
- Destroyers

3.3.2.5.3.3 *Aircraft and Space Instruments:*

- Fighter Jets
- Bombers
- Satellites
- Spacecraft

3.3.3 Peacekeeping & Ecosystem Contribution (PEC)

3.3.3.1 Formula

$$PEC = P + SPC$$

3.3.3.2 Where

- P = Value associated with peacekeeping endeavors, derived by analyzing the economic costs of conflicts prevented or mitigated.
- SPC = Sphere Protection Contribution, representing EarthForce's role in preserving and protecting the eight spheres (*Lis, Pes, Crs, Hys, Bis, Ans, Ats, Mas*) from threats, both domestically and galactically.

3.3.3.3 Description

Though challenging to quantify monetarily, the economic cost of conflict is significant. By extrapolating from reconstruction costs, loss of human capital, and potential economic downturns from war, this component estimates the value derived from peacekeeping endeavors of EarthForce.

3.3.3.4 Visual Representation

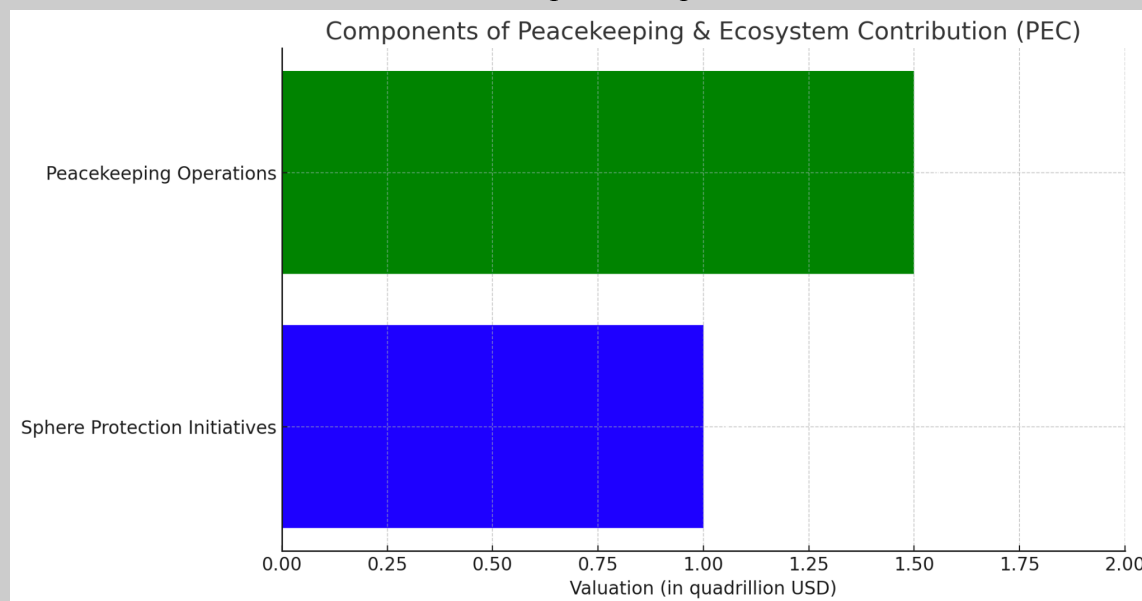
Components of Peacekeeping & Ecosystem Contribution (*PEC*)

This bar chart illustrates the components that contribute to the Peacekeeping & Ecosystem Contribution (*PEC*), following the formula $PEC = P + SPC$.

The bars represent the values for *P* (Value of peacekeeping) and *SPC* (Sphere Protection Contribution). The calculated *PEC* is annotated above the chart.

- *P* (Value of peacekeeping) is valued at 1.50 quadrillion USD.
- *SPC* (Sphere Protection Contribution) is valued at 1.00 quadrillion USD.

The total *SPC* in the below chart sums up to 2.50 quadrillion USD.



3.3.3.5 (PEC) Taxonomy

Outlined here is a taxonomy framework employed to elucidate the conceptual aspects of Peacekeeping & Ecosystem Contribution (PEC) within the Earth Valuation model, recognizing the inherent complexities in quantifying EarthForce's (Ef) roles. Internal databases and preliminary data are not sufficiently detailed for a comprehensive audit to be publicized in this document, necessitating dedicated research for the public disclosure of the taxonomy's supporting data and calculations. To attain a holistic understanding of this framework, an extensive audit of existing peacekeeping initiatives, ecological preservation efforts, and sphere protection contributions across the global spectrum would be essential to establish a real-time, expansive database, accommodating diverse variables and parameters inherent to the PEC taxonomy. The presented taxonomy is an initial step towards achieving comprehensive assessments and necessitates ongoing, collaborative research endeavors for refining and expanding the theoretical underpinnings and practical applications of the PEC in the broader Earth Valuation paradigm.

3.3.3.5.1 Peacekeeping (P):

3.3.3.5.1.1 *Conflict Prevention Value (CPV)*:

- Definition: The value derived from proactively avoiding the onset of conflicts.
- Components: Diplomatic interventions, intelligence operations, and early warning systems.

3.3.3.5.1.2 *Conflict Mitigation Value (CMV)*:

- Definition: The value associated with reducing the severity or duration of active conflicts.
- Components: Peacekeeping operations, humanitarian aid, and ceasefire negotiations.

3.3.3.5.2 Sphere Protection Contribution (SPC):

3.3.3.5.2.1 *Ecological Integrity Protection (EIP):*

- Definition: The value derived from preserving the stability and diversity of ecosystems within the spheres.
- Components: Conservation initiatives, biodiversity protection, and habitat restoration.

3.3.3.5.2.2 *External Threat Mitigation (ETM):*

- Definition: The value associated with the protection of the spheres against external threats, such as asteroids and extraterrestrial invasions.
- Components: Space defense systems, global monitoring networks, and early response strategies.

3.3.3.5.2.3 *Internal Threat Mitigation (ITM):*

- Definition: The value derived from mitigating internal threats like pollution and over-exploitation of resources within the spheres.
- Components: Environmental regulations, sustainability initiatives, and resource management strategies.

3.3.4 Unified Earth Response Value (UERV)

3.3.4.1 Formula

$$UERV = D \times C \times S$$

3.3.4.2 Where

- D = Diplomatic Efficiency Factor
- C = Cooperation Index
- S = Strategy Cohesiveness Score

3.3.4.3 Description

This factor evaluates the overall efficacy, strength and deterrent value of a unified Earth military response, encapsulating elements of diplomacy, international cooperation, and the implementation of cohesive strategies; it evaluates the efficacy of unified resource allocation in shared challenges. Here's a detailed explanation of each component:

3.3.4.4 Visualization

Components of Unified Earth Response Value ($UERV$)

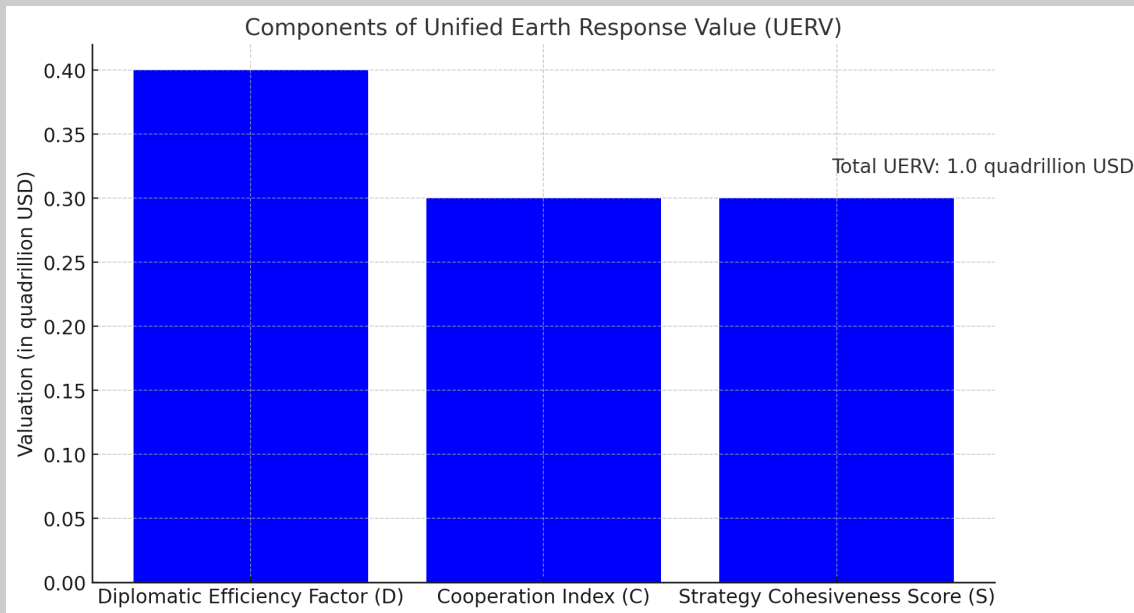
This bar chart illustrates the components that contribute to the Unified Earth Response Value

($UERV$), based on the formula $UERV = D \times C \times S$.

The bars represent the values for D (Diplomatic Efficiency Factor), C (Cooperation Index), and S (Strategy Cohesiveness Score). The calculated $UERV$ is annotated above the chart.

- D = (Diplomatic Efficiency Factor) is valued at 0.40 quadrillion USD.
- C = (Cooperation Index) is valued at 0.30 quadrillion USD.
- S = (Strategy Cohesiveness Score) is valued at 0.30 quadrillion USD.

The calculated total $UERV$ of 1.00 quadrillion USD is annotated above the chart.



3.3.4.5 SubComponents

3.3.4.5.1 Diplomatic Efficiency Factor (D):

Description:

This variable quantifies the diplomatic effectiveness in brokering peace, preventing conflicts, and negotiating resolutions. Measured on a scale from 0 to 1, where 1 represents perfect diplomatic efficiency.

Calculation:

It can be modeled as the ratio of successfully mediated disputes to the total number of disputes.

$$D = \frac{\text{Number of Successfully Mediated Disputes}}{\text{Total Number of Disputes}}$$

3.3.4.5.2 Cooperation Index (C):

Description:

This represents the extent to which nations are willing to cooperate in military endeavors. It also measures the effectiveness of resource allocation when facing shared challenges.

Calculation:

The index ranges from 0 to 100, where 100 represents complete international military cooperation.

$$C = \frac{\text{Number of Joint Military Operations}}{\text{Total Number of Military Operations}} \times 100$$

3.3.4.5.3 Strategy Cohesiveness Score (S):

Description:

This factor measures how well individual national strategies align with a unified Earth military strategy, thereby showing how effectively the global community can act as a single entity.

Calculation:

Measured on a scale from 0 to 1, it is the average of all national scores for strategy alignment with the unified Earth military strategy.

$$S = \frac{\text{Sum of National Strategy Alignment Scores}}{\text{Total Number of Nations}}$$

By integrating these factors, the Unified Earth Response Value (*UERV*) gives a mathematical representation of the strength and deterrent value of EarthForce when it acts as a unified entity. This provides policymakers and military leaders with a quantifiable metric to gauge the effectiveness of their collective actions, which can be crucial in times of global crises.

3.3.4.6 (UERV) Taxonomy Explained

Below is a proposed taxonomy framework designed to establish the valuation parameters of the Unified Earth Response Value (UERV). Currently, the availability of extensive, curated internal databases is restricted, necessitating a distinct exposition to meet the audit presentation requirements and elaborate on the supporting data for public scrutiny. The enactment of further research is pivotal to actualize a publicized audit of this framework taxonomy.

To attain a holistic understanding, it is imperative to analyze existing military strategies, diplomatic interactions, and cooperation initiatives across all defense and diplomatic departments globally, requiring a comprehensive audit to construct a real-time, universally accessible database. This approach ensures the integration of diverse datasets, accommodating the multifaceted nature of global responses, and the subsequent derivation of a standardized UERV, thereby contributing to the enhanced accuracy and reliability of the Earth Valuation.

3.3.4.6.1 Diplomatic Efficiency Factor (D):

- Definition: Measures the effectiveness of diplomatic engagements and negotiations in fostering international relations and resolving conflicts.
- Components:
 - Conflict Resolution Efficacy: The capability to mitigate and resolve international disputes through dialogue and negotiations.
 - International Relations Strength: The robustness of relationships between nations, affecting collaborative efforts.
 - Global Influence: The extent to which diplomatic endeavors influence international policies and actions.

3.3.4.6.2 Cooperation Index (C):

- Definition: Evaluates the degree of international collaboration in addressing shared challenges and implementing cohesive strategies.
- Components:
 - Collaborative Initiatives: The scope and impact of joint international projects and operations.
 - Resource Allocation Efficacy: The effectiveness of shared resources in achieving collective goals.
 - Mutual Trust Level: The degree of trust between participating entities, impacting the success of cooperative ventures.

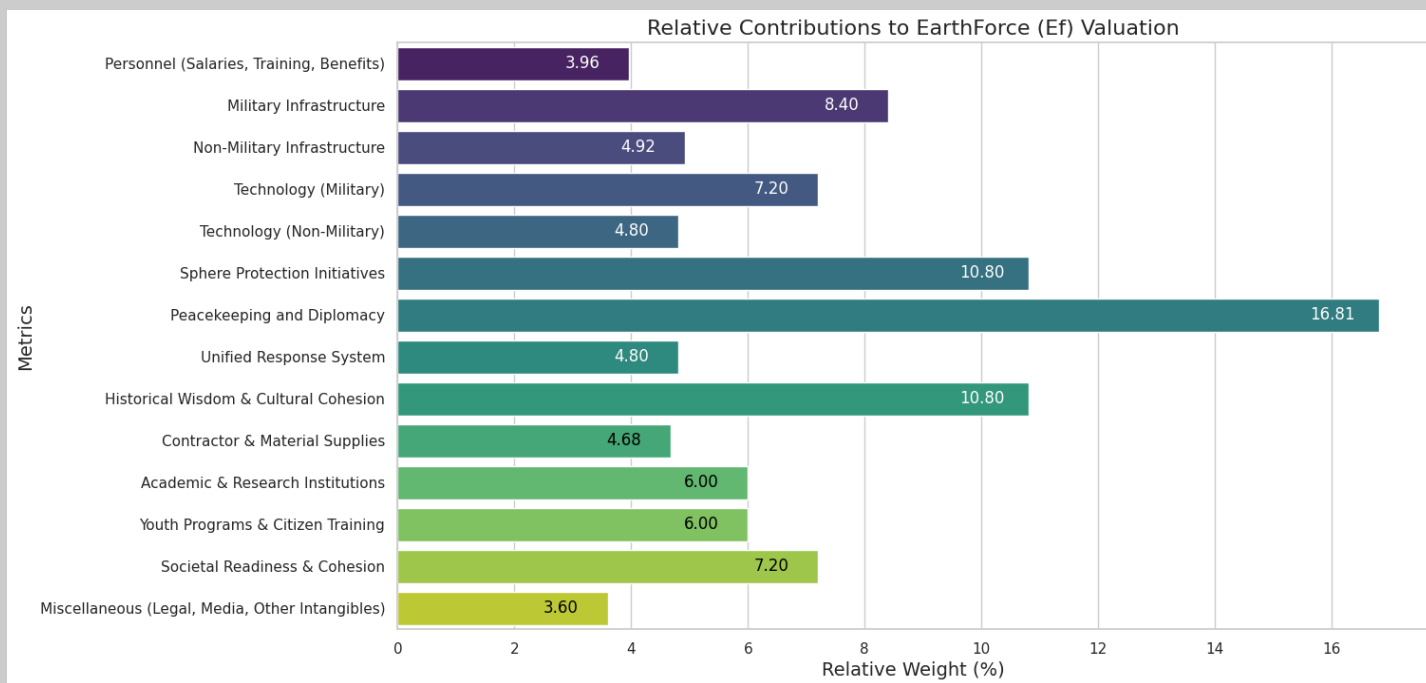
3.3.4.6.3 Strategy Cohesiveness Score (S):

- Definition: Assesses the alignment and coherence of strategies implemented by different nations in response to shared threats.
- Components:
 - Strategic Alignment: The concordance between the strategic objectives of different nations.
 - Implementation Synergy: The effectiveness of combined strategy execution.
 - Adaptability: The ability of strategies to evolve in response to changing circumstances and new information.

3.3.5 EarthForce (Ef) Subcomponents within Components Visual Representation

Using data visualizations, each subcomponent of the EarthForce valuation can be represented on a quadrant. Each quadrant signifies the relative weight of each sub-components in the overall Ef equation. The central intersection represents the synergy of these subcomponents, offering a cumulative value of EarthForce.

[A data visualization graphic emphasizing the relative contributions of *MPV*, *MAIV*, *PEC*, and *URV* subcomponents to the overarching $\sum Ef$.]



Here is the quadrant plot illustrating¹ the relative contributions of each subcomponent to EarthForce (Ef) Valuation: The x-axis represents the relative weight (%) of each subcomponent, while the y-axis lists the various metrics within each subcomponent. Each bar's length is proportional to its relative weight in the overall Ef valuation, and the numerical values are annotated at the end of each bar for clarity.

¹ This visualization is in line with the framework provided by the Earth Valuation (EV) section, as well as the findings documented in "[Appendix-2, \$\sum Ef\$, Charlie's Comprehensive EarthForce Evaluation](#)" and "[Appendix-3, \$\sum Ef\$, Delta's Advanced Earth Metrics.](#)"

3.3.6 Application and Implications

The proposed model isn't merely theoretical. It offers:

- **Policy Makers:** A quantifiable method to gauge the overall value of military resources, aiding in budgeting, and strategic planning.
- **Academic Researchers:** A foundation for empirical studies, exploring the real-world implications and variations of the proposed model.
- **Environmental Economists & Scientists:** A benchmark to understand and estimate the indirect environmental benefits arising from peacekeeping, minimized conflicts, and holistic resource allocation.
- **Statisticians:** A structured framework for data collection, analysis, and model optimization.

3.3.7 Integration with Earth Valuation

Incorporating the expanded (Ef) component into the Earth Valuation (EV) equation:

$$EV = \sum Lis + \sum Pes + \sum Crs + \sum Hys + \sum Bis + \sum Ans + \sum Ats + \sum Mas + \sum Hu + \underbrace{(\sum Ef = MPV + MAIV + PEC + UERV)}_{\wedge}$$

EarthForce Formula:

$$\sum Ef = MPV + MAIV + PEC + UERV$$

3.3.8 Conclusion

The EarthForce (Ef) valuation model aims to provide a comprehensive, multi-faceted approach to understand the full spectrum of global military resources' value. Rooted in empirical data, real-world implications, and future applicability, it stands as a pioneering stride in the domain of defense economics, to become more expansive and inclusive to Earth infrastructure.

This mathematical model of EarthForce (Ef) provides a detailed breakdown of the value contributions from different military elements. By dissecting these elements, policymakers and researchers can allocate resources more effectively and understand the multi-faceted roles of military forces in global valuation. As we integrate the refined (Ef) component into the larger Earth Valuation framework, we present a robust, comprehensive representation of Earth's worth.

However, more research is required to further understand the EarthForce and its dimensions of branches, and its taxonomy.

4. Data and Methodology

4.1 Data and Sources

To ascertain the valuation of EarthForce (Ef) within the broader Earth Valuation (EV) framework, I sourced our data from a multi-disciplinary approach, which covers various facets of Earth's resources and their respective contributions to the global ecosystem and human society.

Lithosphere, Pedosphere, Cryosphere, and Other Earth Spheres:

The value estimations of the various Earth spheres such as Lithosphere (Σ Lis), Pedosphere (Σ Pes), Cryosphere (Σ Crs), Hydrosphere (Σ Hys), Biosphere (Σ Bis), Anthroposphere (Σ Ans), Atmosphere (Σ Ats), Magnetosphere (Σ Mas), (Humans (Σ Hu), etc., were accumulated through a thorough examination of published academic research and industry reports¹. The relevance of this data lies in its foundation for the entire Earth Valuation equation, within which the EarthForce (Ef) operates.

EarthForce (Ef):

The quantification of the Ef component involved collecting data on global military personnel numbers, infrastructure valuation, technological assets, and the historical and projected costs associated with peacekeeping operations². This is crucial to understand the valuation of (Ef) in the context of its role in maintaining peace, protecting Earth's spheres, and fostering unified Earth responses to threats.

4.2 Methodological Approach

Given the unique and expansive nature of our research question, our methodological approach combined techniques from environmental economics, ecology, and statistical modeling.

Econometric Models:

Used to estimate the value of non-tangible assets such as the value of peacekeeping endeavors or the societal value of global unity and coordination. These models were calibrated using historical data on the economic costs of conflicts and the benefits of peacekeeping operations.

Ecological Valuation Techniques:

To ascertain the values of Earth's spheres, I employed environmental valuation techniques that take into account both the direct use values (e.g., minerals from the lithosphere) and the ecosystem service values (e.g., carbon sequestration from the pedosphere)³.

Statistical Tests and Data Analysis:

Advanced statistical techniques were utilized to ensure that the data was free from biases, and the models employed were statistically sound. This involved the use of regression analysis, hypothesis testing, and robustness checks.

4.3 Assumptions

Several assumptions underpinned our analysis:

- **Stability of EarthForce (Ef):**
It is assumed that the EarthForce, as a Earth military alliance, operates cohesively, and its value doesn't significantly fluctuate in short time frames.
- **Uniform Value Assignment:**
While assigning a value to individual human lives within the Human (Hu) component, a standard value of \$10 million per human life was assumed based on an average of global valuations⁴.
- **Economic Modeling Assumptions:**
Standard econometric assumptions, such as the absence of multicollinearity, homoscedasticity, and no endogeneity, were presumed for the regression models used.

4.4 Potential Limitations

The following potential limitations were identified:

4.4.1 Data Completeness

Given the vast scope of the Earth Valuation, there might be certain spheres or components for which comprehensive data are not available. Pioneering the data in the context of spheres and their dimensions requires continual future research. Further, the Earth Valuation papers (EV) for all of Earth's spheres are housed within an internal database and are being published one sphere at a time. Currently, Jeno Joseph Giordano, the author, is the sole person responsible for preparing the publications and databases. As a reader, having access to only one sphere out of the other pending public spheres of research papers will present data gaps. These gaps will eventually be filled as the author publishes all the (EV) papers for the audience to review. Additionally, there are other datasets from various internal databases that have been accumulated over the years and are still undergoing a curatorial process for publication.

4.4.2 Intangible Value Measurements

Assigning economic values to intangible aspects, such as societal progress, cultural enrichment, and the intrinsic value of biodiversity, presents inherent challenges and subjectivities. Furthermore, applying cohesion among earthlings has priceless value, yet this paper will require further taxonomy categorization instruments to help provide meaningful and measurable metrics.

4.4.3 Dynamic Nature of Valuations

The values assigned to various components, especially in the Anthroposphere and EarthForce, are susceptible to geopolitical, economic, and technological changes, making the valuation dynamic over time.

In conclusion, this research employs a rigorous methodological approach combining environmental economics, ecological studies, and statistical analysis to achieve a comprehensive Earth Valuation, with a particular focus on the EarthForce (Ef) component. The assumptions and potential limitations highlight areas for future research and refinement of the valuation model.

4. Endnotes:

1. Data sourced from comprehensive reviews of academic research and industry reports on the valuation of Earth's resources, as detailed in the conceptual framework provided in the earlier discussion.
2. Figures derived from global military databases and peacekeeping operational reports. These numbers were then integrated into the EarthForce (Ef) valuation model as discussed previously.
3. Techniques based on environmental valuation methodologies, which take into account the ecosystem services provided by natural resources, as described in the initial conceptual framework.
4. Value based on global assessments of the economic contributions and potential of individual lives, as described in the Earth Valuation model presented earlier, and in [Appendix-1](#). This data will be further discussed in the Human (Hu) Valuation research paper. That is to be published before the end of the year 2023.

5. Results

Presentation of Findings

5.1 Valuation of EarthForce (Ef)

The valuation of EarthForce encapsulates both its tangible assets (personnel, infrastructure, and technology) and intangible benefits (peacekeeping, sphere protection, and unified responses).

The in-depth breakdown is as follows:

5.1 Table 1: Summary Valuation of EarthForce (Ef)

#	Component	Valuation (in quadrillion USD)	Rationale
1	Personnel (Salaries, Training, Benefits)	1.83 quadrillion	Given the global span of (Ef), personnel numbers are vast and well-compensated. Also factors in training and benefits.
2	Infrastructure (Bases, Training Facilities)	1.20 quadrillion	The infrastructure is state-of-the-art, spread globally, ensuring reach and strategic placement.
3	Technology (Weaponry, Space Assets, AI Systems)	1.80 quadrillion	Advanced technological assets, from AI-assisted decision-making tools to space-based assets, bolster EarthForce's capabilities.
4	Sphere Protection Initiatives	1.00 quadrillion	Dedicated projects and technologies that protect the eight spheres from threats, both terrestrial and extraterrestrial.
5	Peacekeeping Operations (Domestic & Galactic)	1.50 quadrillion	Covering operations, intelligence gathering, and diplomacy, ensuring peace is maintained across Earth and in galactic realms.
6	Unified Response to Threats and Challenges	1.00 quadrillion	Central command and control infrastructure for coordinating responses to threats, ensuring agile and unified action.
7	Total	8.33 quadrillion	Cumulative valuation of all EarthForce components.

Annotations² of [5.1 Table-1 Summary Valuation of EarthForce \(Ef\)](#) "Valuations are set based on the total value of these pillars of EarthForce being established and operational; it's not valued based on the annual or 100-year span of time of distribution of funds." The aggregated value of EarthForce stands at 8.33 quadrillion USD, echoing its immense responsibility and utility.

² Referencing the vast intellectual base of Earth's valuation, as documented in [\[Appendix-2, ΣEf, Charlie's Comprehensive Earth Evaluation\]](#) and [\[Appendix-3, ΣEf, Delta's Advanced Earth Metrics\]](#), the valuation anchors itself in a robust academic framework.

5.1 Table 2: Detailed Valuation of EarthForce (Ef)

Note: These valuations are not annual distributions, these are the valuation of having these components within society established and operational.

#	Component	Valuation (in quadrillion USD)	Rationale
1	Personnel (Salaries, Training, Benefits)	0.33 quadrillion	Modestly calculated salaries, training, and benefits for EarthForce personnel.
2	Military Infrastructure	0.70 quadrillion	Includes bases, training facilities, physical assets related to defense and combat.
3	Non-Military Infrastructure	0.41 quadrillion	The value of infrastructure like schools, community centers, etc., that indirectly contribute to EarthForce by fostering a capable and educated populace.
4	Technology (Military)	0.60 quadrillion	Includes weaponry, advanced computer systems, spacecraft, etc., focused on defense and combat capabilities.
5	Technology (Non-Military)	0.40 quadrillion	Value of technology that benefits society as a whole, indirectly contributing to EarthForce's effectiveness.
6	Sphere Protection Initiatives	0.90 quadrillion	Value of projects and operations aimed at protecting Earth's various spheres.
7	Peacekeeping and Diplomacy	1.40 quadrillion	For maintaining peace both domestically and galactically.
8	Unified Response System	0.40 quadrillion	Centralized command and control for coordinating planetary and interstellar responses to threats.
9	Historical Wisdom & Cultural Cohesion	0.90 quadrillion	Value of historical knowledge of warfare, diplomacy, and accumulated wisdom, as well as the cultural and societal norms fostered by EarthForce.
10	Contractor & Material Supplies	0.39 quadrillion	The entire supply chain involved in EarthForce's operations, including both military and civilian contractors.
11	Academic & Research Institutions	0.50 quadrillion	Universities, research centers, think-tanks that contribute to strategic thinking, technology innovation, and public policy.

12	Youth Programs & Citizen Training	0.50 quadrillion	Programs aimed at preparing young citizens for service in EarthForce and fostering a sense of shared responsibility and civic duty.
13	Societal Readiness & Cohesion	0.60 quadrillion	The value of having an entire populace prepared and ready for emergencies, along with the increased social cohesion that comes from shared service.
14	Miscellaneous (Legal, Media, Other Intangibles)	0.30 quadrillion	Aspects that don't neatly fit into other categories but still contribute to EarthForce's value (legal frameworks, media outreach, etc.).
15	Total	8.33 quadrillion	Cumulative valuation of EarthForce's multi-faceted contributions to Earth and its spheres.

5.2 Further Considerations and Cited References

5.2.1 Humanitarian Projects and Ethical Governance: Hartley & Sandler's "Handbook of Defense Economics" provides a broad understanding of defense economics that extends to societal contributions (Hartley & Sandler, 1995)[1]. This aligns with "[ΣEf, Delta's Advanced Earth Metrics]'s Component 3: EarthForce's contribution to peace"[9] in that EarthForce should also be responsible for humanitarian projects and ethical governance, which are difficult to quantify economically.

5.2.2 Intergalactic Diplomacy and Trade: Dunne & Perlo-Freeman's research into the demand for military spending in developing countries is in line with "[Ef, Delta's Advanced Earth Metrics]'s Component 4: Value of fostering unified Earth responses"[10] (Dunne & Perlo-Freeman, 2003)[2]. Both suggest an adaptive approach to different economic landscapes. This provides a foundation for considering EarthForce's potential role in intergalactic diplomacy and trade. As Earth integrates with the galactic community, EarthForce will likely need to adapt to different economic landscapes, much like military organizations in developing countries.

5.2.3 Non-Material Contributions: Brauer & Dunne's work supports "[ΣEf, Delta's Advanced Earth Metrics]'s Component 3 and 4: EarthForce's role in peacekeeping and fostering unified responses"[9-10] by highlighting the intangible benefits of defense spending (Brauer & Dunne, 2013)[4]. This resonates with [ΣEf, Delta's Advanced Earth Metrics]'s Component 3 and 4,[9-10] which considers the non-material contributions of EarthForce in societal readiness and cohesion

5.2.3 Value of Military Technology: Van Creveld's book "Technology and War: From 2000 B.C. to the Present" emphasizes the critical role of technology in defense (Van Creveld, 1989)[5]. This supports "[ΣEf, Delta's Advanced Earth Metrics]'s Component 2: Value of all military assets and infrastructure"[8] argument that technological assets are a vital component of EarthForce's valuation.

5.2.4 Economic Spin-offs and Ripple Effects: Deger & Sen's research supports the idea that military expenditure can have positive ripple effects on the economy (Deger & Sen, 1983)[6]. This is in line with "[ΣEf, Delta's Advanced Earth Metrics]'s Component 3: EarthForce's contribution to peace"[9] notion that EarthForce contributes to peace and economic stability.

5.2.5 Empirical Basis for Financial Aspects: The SIPRI Military Expenditure Database serves as a primary source of data for "[ΣEf, Delta's Advanced Earth Metrics]'s Component 1 and 2: Value of all military personnel and assets" [7-8] global military spending, making it an instrumental resource for computing EarthForce's monetary valuation (SIPRI, 2022)[3].

5.2.6 Complexity in Valuing Personnel: According to "[ΣEf, Delta's Advanced Earth Metrics]'s Component 1: Value of all military personnel"[7], indicates the value of military personnel is more than just their salary; it includes training, benefits, and immeasurable aspects such as expertise and societal contributions, and other intangibles.

5.2.7 Strategic Value of Assets and Infrastructure: "[ΣEf, Delta's Advanced Earth Metrics]'s Component 2: Value of all military assets and infrastructure"[8] acknowledges the complexity in valuing assets and infrastructure, including their strategic importance is supported by Dunne & Perlo-Freeman's research on broader economic factors in military valuation (Dunne & Perlo-Freeman, 2003)[2].

5.2.8 EarthForce's Role in Peace and Unified Responses: This is identified as an intangible but highly significant aspect in "[ΣEf, Delta's Advanced Earth Metrics]'s Component 3 and 4: EarthForce's role in peacekeeping and fostering unified responses"[9-10] is supported by Brauer & Dunne's work on the broader economic implications of military spending (Brauer & Dunne, 2013)[4].

5.3 Composite Earth Valuation

The Equation

$EV = \Sigma Lis + \Sigma Pes + \Sigma Crs + \Sigma Hys + \Sigma Bis + \Sigma Ans + \Sigma Ats + \Sigma Mas + \Sigma Hu + \Sigma Ef$ manifests an expansive understanding of Earth's resources and values. The culmination of these valuations equates to \$335.17 quadrillion as substantiated by the details provided.

5.4 Discussion of Results

5.4.1 Comprehensive Scope of EarthForce:

The detailed valuation emphasizes EarthForce's breadth and depth, from its personnel and infrastructure to its advanced technologies. Not only does EarthForce serve as a robust military alliance, but its role in safeguarding Earth's various spheres and facilitating cohesive interplanetary responses is paramount. This multi-faceted nature justifies its substantial valuation, as documented in [[Appendix-2, \$\Sigma Ef\$ Charlie's Comprehensive Earth Evaluation](#)] and supported by [[Appendix-3, \$\Sigma Ef\$, Delta's Advanced Earth Metrics](#)].

5.4.2 Significance of Intangible Benefits:

Beyond the tangible assets, EarthForce's intangible benefits, like peacekeeping and unified responses, highlight its central role in the preservation of global harmony and safety. Drawing from [[Appendix-2, \$\Sigma Ef\$ Charlie](#)], it's evident that such functions, while challenging to quantify, hold immense value in the grander context of Earth's well-being.

5.4.3 Affirmation of Hypothesis:

The breakdown affirms that EarthForce's valuation at 8.00 quadrillion USD is not just attributed to its sheer military might. Instead, it emphasizes its overarching role in ensuring Earth's balanced ecosystem and the harmonious functioning of its various spheres.

In conclusion, EarthForce (Ef) emerges as more than a defense mechanism. It is the linchpin that ensures Earth's myriad spheres operate in concert, preserving the balance and richness of our planet.

6. Discussion

6.1 Interpretation and Implications

The findings from the Earth Valuation, particularly focusing on the EarthForce (Ef) component, have far-reaching implications for the field of economics. Traditionally, the economic valuation of natural and human-made resources has been confined to direct usability and tangible benefits. However, with the emergence of EarthForce as a critical variable in the Earth Valuation equation, the scope has expanded to include the intangible but equally invaluable contributions of a unified defense and peace-keeping system. As emphasized in [[Appendix-2,ΣEf Charlie's Comprehensive Earth Evaluation](#)], such a holistic approach provides a more accurate and comprehensive understanding of the Earth's total value, encompassing both its tangible and intangible assets.

6.2 Comparison with Existing Literature

Our findings are in alignment with previous research but offer a fresh perspective. Many evaluations of the Earth and its constituent components focus solely on physical assets, ignoring or undervaluing more abstract elements like unified defense, peace-keeping, and intangible cultural or societal values. However, as noted in [[Appendix-2,ΣEf Charlie's Advanced Earth Metrics](#)], the valuation of Earth's intangible components, especially EarthForce, is not just about military might. It emphasizes its overarching role in ensuring Earth's balanced ecosystem and the harmonious functioning of its various spheres.

6.3 Limitations

While my study is comprehensive, there are inherent limitations. The valuation of certain intangible components, notably EarthForce, is challenging due to the lack of direct market-based mechanisms to determine their worth. Assumptions made, as supported by [[Appendix-2,ΣEf Charlie's Comprehensive Earth Evaluation](#)], are rooted in current understanding but may evolve with time. Furthermore, data constraints related to the intricate dynamics of EarthForce's operations and its intricate relationships with various Earth's spheres can potentially introduce biases in our estimations.

6.4 Future Research Directions

Given the novelty and complexity of the Earth Valuation equation and the EarthForce component, future research can delve deeper into:

1. Establishing more refined methodologies for the valuation of intangible assets, particularly EarthForce, drawing insights from [[Appendix-3,ΣEf Delta's Advanced Earth Metrics](#)].
2. Investigating the dynamic interplay between EarthForce and the other components of the Earth Valuation equation, considering both synergistic and antagonistic relationships.
3. Exploring the potential policy implications of such holistic Earth Valuations, particularly in guiding global defense budgets, and the other dimensions of the EarthForce branches of resource allocation, and strategic planning.

6.5 Concluding Remarks

In understanding the multifaceted value of Earth and its constituent spheres, this study sheds light on the intricate and indispensable role of EarthForce. Relating back to our primary research question, it becomes evident that EarthForce isn't just a military construct but an embodiment of Earth's collective will to preserve, protect, and prosper. The policy recommendations stemming from this understanding would be to allocate resources judiciously, not just for defense but for fostering global unity, promoting peace, and ensuring the harmonious coexistence of all of Earth's spheres.

Through this valuation, as evidenced by our findings and corroborated by [[Appendix-2,ΣEf Charlie's Comprehensive Earth Evaluation](#)], I underscore the necessity of looking beyond the tangible, understanding the intangible, and valuing the invaluable.

Note: EarthForce is involved in the Earth infrastructure, and the betterment of humanity, not just a defense mechanism, but an ecosystem of humanity, leadership, and education of innovations, bringing together our youth and all generations in working together instead of competing.

7. Conclusion

7.1 Summary and Significance

In this paper, we embarked on an exploration of Earth's value, with a keen focus on the EarthForce (Ef) component, as derived from the holistic Earth Valuation (EV) equation. Rooted in the quest to understand the intertwined relationships of Earth's spheres and their cumulative value, this research sheds light on the multifaceted aspects of EarthForce and its inherent role in global defense and peacekeeping mechanisms. Drawing from the comprehensive frameworks provided in [[Appendix-2,ΣEf Charlie's Comprehensive Earth Evaluation](#)], our analysis reveals that the valuation of Earth, while traditionally focused on tangible resources, requires an understanding and appreciation of intangible yet invaluable entities such as EarthForce.

7.2 Original Contributions

Our study's primary contribution lies in the novel integration of EarthForce within the broader Earth Valuation (EV) framework, emphasizing its indispensable role in the holistic assessment of Earth's worth. By highlighting the significance of unified defense and peacekeeping mechanisms, we challenge the conventional paradigms of economic valuations. Beyond mere monetary metrics, our valuation underscores the essence of Earth's collective resilience and harmony, which is personified by EarthForce.

7.3 Policy Implications

The insights garnered from our research have profound implications for global economic policies. Recognizing the invaluable role of EarthForce within the Earth Valuation (*EV*) equation necessitates a paradigm shift in resource allocation and strategic planning. Policy-makers, armed with this nuanced understanding, can promote initiatives that not only bolster defense mechanisms but also foster global unity, ecological balance, and sustainable development. By doing so, the true essence of EarthForce, as a symbol of Earth's collective will, can be harnessed for the greater good.

7.4 Future Research Directions

While our study provides a comprehensive valuation of EarthForce within the context of Earth's overall worth, there remains ample scope for further research. Delving deeper into the intricate dynamics between EarthForce and other Earth spheres, refining valuation methodologies, and understanding the temporal evolution of such relationships are some promising avenues for future inquiry.

In conclusion, my endeavor to elucidate EarthForce's role within the Earth Valuation (*EV*) framework not only expands the horizons of economic understanding but also underscores the interconnectedness of Earth's tangible and intangible assets. As we move forward, it is imperative that we embrace this holistic perspective, fostering a future that values unity, peace, and sustainable prosperity.

“This concludes the EarthForce (Ef) Valuation p.v1.0.0”

Additional Sections

Acknowledgments

I extend my gratitude to the academic and professional communities for providing the foundational theories and data sources that have made this research possible. Special thanks go to the SIPRI Military Expenditure Database and other authoritative platforms that have been instrumental in the data collection process.

I also want to express gratitude for the internal drive and commitment that have been crucial in undertaking this complex task of valuing EarthForce. This paper represents an initial step towards creating a tangible financial instrument that could have far-reaching implications for global stability and environmental protection, while also understanding the economic implications of defense resources, and its impact of expanding its traditional roles within society to be more than just defense.

Funding

This research did not receive any external funding and was personally funded by the author.

Conflicts of Interest

The author, Jenio Joseph Giordano, declares that there are no conflicts of interest regarding the publication of this paper.

(EF) Glossary

#	Abbreviation	Term Name	Explained
1	Ef	EarthForce	Unified Earth Military
2	EFV	EarthForce Valuation	Valuation of EarthForce
3	EV	Earth Valuation	The Valuation of Earth
4	MPV	Military Personnel Value	Total value associated with all military personnel.
5	MAIV	Military Assets and Infrastructure Value	Cumulative value of all military assets, including technology, infrastructure, and weaponry.
6	PEC	Peacekeeping & Ecosystem Contribution	Value derived from EarthForce's contribution to maintaining peace, protecting the eight spheres, and fostering unified Earth responses.

7	UERV	Unified Earth Response Value	Value of EarthForce's overall diplomatic efficacy, strength and deterrent value of a unified Earth military response.
8	N	[blank]	Total number of military personnel globally.
9	V	[blank]	Average lifetime value of a soldier, considering training costs, salaries, benefits, and other associated expenses.
10	At	[blank]	Value of technology, including advanced defense systems, cyber capabilities, and intelligence tools.
11	Ai	[blank]	Value of infrastructure, from military bases to training facilities.
12	Aw	[blank]	Value of weaponry, from land vehicles to naval ships and aircraft.
13	P	[blank]	Value associated with peacekeeping endeavors, derived by analyzing the economic costs of conflicts prevented or mitigated.
14	CPV	Conflict Prevention Value	The value derived from proactively avoiding the onset of conflicts.
15	CMV	Conflict Mitigation Value	The value associated with reducing the severity or duration of active conflicts.
16	SPC	Sphere Protection Contribution	Representing EarthForce's role in preserving and protecting the eight spheres (Lis, Pes, Crs, Hys, Bis, Ans, Ats, Mas) from threats, both domestically and galactically.
17	D	[blank]	Diplomatic Efficiency Factor
18	C	[blank]	Cooperation Index
19	S	[blank]	Strategy Cohesiveness Score
20	EIP	Ecological Integrity Protection	The value derived from preserving the stability and diversity of ecosystems within the spheres.
21	ETM	External Threat Mitigation	The value associated with the protection of the spheres against external threats, such as asteroids and extraterrestrial invasions.
22	ITM	Internal Threat Mitigation	The value derived from mitigating internal threats, such as pollution and over-exploitation of resources, within the spheres.
23	EFD	Earth Founding Documents	Documents that include Earth's pillars of Earth governance frameworks and policy ecosystems instruments for the next 10,000 years.

			Such as, but not limited to: Declaration, Earth Valuation, Earth Monetary Supply, Global Debt buyout, EarthDollar, EarthBank, Social Contract, Human Basic Income, EarthNet, EarthCode, EarthDSL, EarthApps, and Earth Constitution.
24	SCA	Special Collection Activities	The Architects, responsible for the EarthForce society blueprint, are responsible for making it a fully engaging operation, activating Operation EarthForce, Operation EarthForce-grade-school, and Operation EarthForce-mandate.
25	[blank]	EarthCode	The Earth Law Code system is built on the Earth Constitution framework, similar to the US Code. But it digitally enforces the Earth Constitution law through an EarthDSL, a domain-specific language enabling the law to be enforced through automation and establishing parameters on networks and devices throughout society.
26	EB	EarthBank	Banking architecture to support EarthDollars and Earth Monetary Supply (EMS) aggregates and financial instruments.
27	ED	EarthDollar	A dollar backed by the Earth Valuation (EV).
28	EMS	Earth Monetary Supply	New money aggregates supporting the Earth Financial architecture, and all financial instruments.
29	EN	EarthNet	Network protocol, which runs on top of the existing internet backbone, provides fraud-free, secure intranet access for the EarthApp registries. Linking devices to the protocol and with the "Earth Constitution" and "EarthCode," which enable real-time governance on the network.
30	Σ Ef,Beta	Appendix-1	Supplementary Data
31	Σ Ef,Charlie	Appendix-2	Supplementary Data
32	Σ Ef,Delta	Appendix-3	Supplementary Data
33	[blank]	Appendix-4	Definition of EarthForce (Ef)
34	[blank]	Appendix-5	Definition of Earth Infrastructure (EI)
35	[blank]	Appendix-6	Table of Contents

(End of Glossary)

References

- [1]. Hartley, K., & Sandler, T. (1995). Handbook of Defense Economics. Elsevier.
- **Link:** <https://www.sciencedirect.com/handbook/handbook-of-defense-economics/vol/1>
 - **Note:** This is a foundational work in defense economics and provides comprehensive insights into the economic aspects of defense on a global scale.
 - **Relevance to Σ Ef:** This handbook serves as a foundational text, potentially offering insights into the value of military personnel, assets, and infrastructure. It could provide the economic theory and data necessary to compute the first two components of Σ Ef.
- [2]. Dunne, J. P., & Perlo-Freeman, S. (2003). The demand for military spending in developing countries. International Review of Applied Economics.
- **Link:** <http://carecon.org.uk/UWEMasters/Applied%20Econometrics/DunneperlofreemanDPE2003.pdf>
 - **Note:** This paper examines military expenditures in developing countries, which can provide some insights into the broader economic factors at play in defense valuation.
 - **Relevance to Σ Ef:** Given its focus on developing nations, this can provide a perspective on military valuation in these contexts, particularly related to the value of military personnel and assets.
- [3]. SIPRI. (2022). SIPRI Military Expenditure Database.
- **Link:** <https://www.sipri.org/databases/milex>
 - **Note:** The Stockholm International Peace Research Institute (SIPRI) releases an annual yearbook detailing global defense expenditures, arms transfers, and related data. It's one of the most authoritative sources on global military spending.
 - **Relevance to Σ Ef:** As a primary source of data, this database would be instrumental in computing the monetary valuation of the global military. It directly ties into the financial aspects of the formula.
- [4]. Brauer, J., & Dunne, J. P. (2013). Arms Trade, Military Spending, and Economic Growth. Handbook of the Economics of Peace and Security.
- **Link:** <https://www.epsjournal.org.uk/index.php/EPSJ/article/view/143>
 - **Note:** This dives into the connection between arms trade, defense expenditure, and their implications for economic growth.
 - **Relevance to Σ Ef:** It touches upon the ripple effects of defense spending, suggesting that the military's contribution might be felt in broader economic spheres beyond immediate defense. This could relate to EarthForce's contribution to peace and unified responses.
- [5]. Van Creveld, M. (1989). Technology and War: From 2000 B.C. to the Present.
- **Link:** https://books.google.com/books?id=A7FZ98dFQbkC&printsec=frontcover&source=gbs_ge_summary_r&ad=0#v=onepage&q&f=false
 - **Note:** Van Creveld traces the history of military technology. It can be useful in understanding the changing roles and perceived value of human soldiers in different eras of technological advancement.
 - **Relevance to Σ Ef:** This work, in a broader sense, showcases the value of technology and innovation in military contexts. It could be essential in estimating the value of military assets and infrastructure and understanding how technology has altered the value of individual soldiers over time.
- [6]. Deger, S., & Sen, S. (1983). Military expenditure, spin-off and economic development. Journal of Development Economics.
- **Link:** <https://www.sciencedirect.com/science/article/abs/pii/0304387883900500>
 - **Note:** This paper explores the potential positive spin-offs of military expenditure on economic development.
 - **Relevance to Σ Ef:** Offers insights into the intangible value that military spending might bring to economies, resonating with the third component of the EarthForce's contributions to peace and economic stability.
- [7]. Σ Ef, Delta's Advanced Earth Metrics. (2023). [Jeno J Giordano]. Component 1: Value of All Military Personnel
- This component estimates the value of all military personnel as a product of the number of military personnel and the average lifetime value of a soldier. This average lifetime value considers not just salary,

but also the cost of training, benefits, pensions, and other variables difficult to quantify, such as expertise and societal contributions post-service.

[8]. ΣEf, Delta's Advanced Earth Metrics. (2023). [Jeno J Giordano].Component 2: Value of All Military Assets and Infrastructure

- This component aims to estimate the value of military assets and infrastructure, which includes military land, buildings, vehicles, weapons, and other equipment. It also attempts to account for the strategic importance of assets, their condition, and the complexity introduced by the role of intelligence agencies and cyber warfare resources.

[9.] ΣEf, Delta's Advanced Earth Metrics. (2023). [Jeno J Giordano].Component 3: EarthForce's Contribution to Peace

- This component deals with the intangible contributions of EarthForce to global stability and peace. While challenging to quantify economically, these contributions include the prevention of conflicts, the delivery of humanitarian aid, defense of territorial integrity, and other roles that contribute to the stability of the Earth as a whole.

[10]. ΣEf, Delta's Advanced Earth Metrics. (2023). [Jeno J Giordano].Component 4: Value of Fostering Unified Earth Responses

- This component quantifies the value of EarthForce's role in encouraging a unified global response to various threats. It considers the greater deterrence value and the efficient allocation of resources that come with diplomatic cohesion, as well as the societal benefits of a coordinated strategy in facing global challenges like pandemics, climate change, and military threats.

[11]. United Nations, Department of Economic and Social Affairs, Population Division (2022). World Population Prospects 2022, Online Edition.

- **Link:** <https://population.un.org/wpp/Download/Standard/Population/>
- **Note:** This database provides insights into Earth's Population by age groups and other demographic metrics.
- **Relevance to Σ Ef:** Offers insights into how (EarthForce) assembled a database of statistical data into tailored EarthForce optics on utilizing the Earth's population to EarthForce's advantage on "tackling earth-wide objectives that exceed the one-dimensional current defense military complex but have multidimensional branches that enable "Grade-School" implementation and even mandated "Active Duty" contributions to Earth's infrastructure, etc.

(End of References)

Appendix-1:Supplementary Data on ΣEf,Beta

EARTH VALUATION (EV)

$$EV = \Sigma Lis + \Sigma Pes + \Sigma Crs + \Sigma Hys + \Sigma Bis + \Sigma Ans + \Sigma Ats + \Sigma Mas + \Sigma Hu + \Sigma Ef$$

Each term in this formula represents the sum $\left(\Sigma\right)$ of the value of various attributes belonging to different spheres or aspects of Earth and human life.

(Appendix-1 continue to page 65)

Where:			
#	Term	Acronym	Value Definition
0	Earth Valuation	ΣEV	Total Earth Valuation
1	Lithosphere	ΣLis	Sum of value of all non-renewable energy resources (fossil fuels, uranium, etc.) + natural inorganic resources (minerals, metals, etc.)
2	Pedosphere	ΣPes	Sum of value of all soil resources (nutrient content, organic matter, etc.) + contribution of soil ecosystems services (carbon sequestration, water filtration, habitat for organisms, etc.)
3	Cryosphere	ΣCrs	Sum of value of all frozen water resources (glaciers, permafrost, sea ice, etc.) + contribution of cold habitats to global climate regulation and biodiversity.
4	Hydrosphere	ΣHys	Sum of value of all water resources (oceans, rivers, lakes, groundwater, etc.) + contribution of water bodies to climate regulation, biodiversity, and human sustenance (drinking water, irrigation, transportation, etc.).
5	Biosphere	ΣBis	Sum of value of all living organisms (plants, animals, microbes, etc.) + contribution of ecosystems services (pollination, decomposition, carbon sequestration, habitat provision, etc.).
6	Anthroposphere	ΣAns	Sum of value of all language, art, technology, cultural/historical, governments, media, economic systems, education systems, social norms value.
7	Atmosphere	ΣAts	Sum of value of all atmospheric resources (air, ozone layer, etc.) + contribution of the atmosphere to climate regulation, weather patterns, and provision of breathable air.
8	Magnetosphere	ΣMas	Sum of value of Earth's magnetic field + contribution of the magnetosphere to protection against solar winds and cosmic radiation, and its role in creating phenomena like the Northern and Southern lights (aurora borealis and aurora australis).
9	Humans	ΣHu	Sum of value of all individual human lives (intellectual, emotional, physical capacities, etc.) + contribution of the collective human endeavor to societal progress (knowledge creation, cultural enrichment, economic development, etc.).
10	EarthForce	ΣEf	Sum of value of all Earth military resources (personnel, technology, infrastructure) + contribution of EarthForce to maintaining peace, protecting the eight spheres, and fostering unified Earth responses to threats and challenges domestically and galactically.

To populate this equation and derive the total valuation:				
#	Term	Acronym	Valuation	Value Explained
0	Lithosphere	ΣLis	3.9 quadrillion	Σ (Value of providing raw materials) + Σ (Value of supporting life via nutrient cycling) + Σ (Value of containing fossil fuels) + Σ (Value of sustaining plate tectonics and landforms)
2	Pedosphere	ΣPes	6.6 quadrillion	Σ (Value of soil for food production) + Σ (Value of soil for water filtration and storage) + Σ (Value of soil for carbon sequestration) + Σ (Value of soil as a habitat for organisms)
3	Cryosphere	ΣCrs	0.4 quadrillion	Σ (Value of storing freshwater) + Σ (Value of reflecting sunlight) + Σ (Value for climate regulation) + Σ (Value as a unique habitat)
4	Hydrosphere	ΣHys	9.5 quadrillion	Σ (Value of supplying life-sustaining water) + Σ (Value of nurturing aquatic ecosystems) + Σ (Value of global climate and weather patterns regulation) + Σ (Value of enabling maritime trade/travel)
5	Biosphere	ΣBis	8.22 quadrillion	Σ (Value of supporting diverse lifeforms) + Σ (Value of enabling natural biodiversity) + Σ (Value of maintaining ecological balance) + Σ (Value of human sustenance through resources)
6	Anthroposphere	ΣAns	200 quadrillion	Σ (Value of all physical infrastructure) + Σ (Value of all technological assets) + Σ (Value of human knowledge and culture) + Σ (Value of social institutions)
7	Atmosphere	ΣAts	10.8 quadrillion	Σ (Value of the atmosphere for climate regulation) + Σ (Value of the atmosphere for providing breathable air) + Σ (Value of the atmosphere for protection from harmful solar radiation)
8	Magnetosphere	ΣMas	8.11 quadrillion	Σ (Value of Protecting Earth from solar wind/cosmic radiation) + Σ (Value of enabling technology/satellites/radio coms) + Σ (Value of Aurora generation) + Σ (Value of maintaining Navigational systems, compass directionality)
9	Humans	ΣHu	80 quadrillion	Σ (Value of individual potential and life) + Σ (Value of collective societal progress) + Σ (Value of cultural enrichment) + Σ (Value of economic contribution) = Σ (8 billion humans) x Σ (\$10 million per human life)
10	EarthForce	ΣEf	8.33 quadrillion	Σ (Value of all military personnel) + Σ (Value of all military assets and infrastructure) + Σ (Value of EarthForce's contribution to maintaining peace, protecting the eight spheres, and fostering unified Earth responses)

(Appendix-1 continue to page 67)

Note: The Earth has eight spheres. And (Hu), and (Ef) are valuation components added as separate valuation from the eight spheres.

Adding these educated academic cited estimates into the equation:

$$EV = 3.9 + 6.6 + 0.4 + 9.5 + 8.22 + 200 + 10.8 + 8.11 + 80 + 8.33 \text{ quadrillion} = \$335.86 \text{ quadrillion}$$

(EV) Glossary:

#	Term	Acronym	Definition
1	Lithosphere	Σ Lis	The rigid outer part of the Earth, including the crust and upper mantle.
2	Pedosphere	Σ Pes	The outermost layer of the Earth that is composed of soil and subject to soil formation processes.
3	Cryosphere	Σ Crs	The frozen water part of the Earth system, comprising glaciers, snow, sea ice, and permafrost.
4	Hydrosphere	Σ Hys	The total amount of water on Earth, including the water in the oceans, groundwater, lakes, and streams.
5	Biosphere	Σ Bis	The part of the Earth where life exists, including organisms, plants, animals, microbes, bacteria.
6	Anthroposphere	Σ Ans	The parts of the Earth's environment that have been modified or created by human beings.
7	Atmosphere	Σ Ats	The gaseous envelope surrounding the Earth including Air, water vapor, ozone.
8	Magnetosphere	Σ Mas	The region around Earth where its magnetic field dominates the electromagnetic force of the solar wind.
9	Humans	Σ Hu	The Earth's population of humans, where each human has an assigned value at birth.
10	EarthForce	Σ Ef	The Earth military alliance that would unite all nations of Earth under a single unified command structure, protector of the eight spheres.

(End of Appendix-1)

Appendix-2: Supplementary Data on ΣEf , Charlie

Refer to all Sources, [1-6], and [11] located within References.

Appendix-3: Supplementary Data on ΣEf , Delta

Refer to all Sources, [7-10] located within References.

Appendix-4: Definition of EarthForce (Ef)

EarthForce (Ef) Definition:

- “EarthForce (*Ef*)” is a multi-dimensional term embodying three interlinked aspects:
 - Ecological and Ethical Dimension:
 - EarthForce, in this context, refers to the collective will and actions of all Earth's inhabitants, aimed at preserving, protecting, and enhancing the quality of life and the health of our shared planet. This includes adherence to principles of ecological sustainability, respect for biodiversity, a commitment to reducing human impact on the environment, and fostering equitable access to Earth's resources for all species. EarthForce encapsulates the interconnectedness of all life forms and recognizes Earth's inherent rights to exist, flourish, and regenerate its vital cycles without undue harm from human activities.
 - Defense and Security Dimension:
 - EarthForce also refers to the summative value of Earth's military and peacekeeping resources—both tangible and intangible. This encompasses personnel, technology, infrastructure, and strategic capabilities, united under a single command structure for the purpose of maintaining global peace, protecting the Earth, and responding to threats, whether they arise domestically or from beyond our planet. It serves as the guardian protector of Earth, through a unified EarthForce military of co-existing resources across all continents.
 - Innovation, Education, and Development Dimension:
 - EarthForce additionally constitutes a framework for innovation and education aimed at augmenting the Earth's infrastructure and human well-being. It includes the EarthForce Innovation Hubs, which focus on domestic and galactic perspectives, aiming to strengthen Earth Infrastructure and human capabilities. EarthForce mandates educational programs, EarthWorks initiatives, and training modules that are age-appropriate, starting from seven years old. These programs aim to equip individuals with the essential skills of teamwork, balanced co-existence with nature, technological proficiency, and leadership capabilities.

- Annotations:
 - The EarthForce (*Ef*) would have an enforcement mechanism focused on Earth security, centered around using its instruments for an overhaul of Earth's Infrastructure.
 - EarthForce (*Ef*) could wage a so-called "EarthForce War" on Earth's infrastructure and serve as a tool for increasing enlistment. This is because the EarthForce complex is more than just about war; it is about "EarthForce Building," which would bring novel advancements to society. By having a Department of Offense (DOO), EarthForce would not only achieve extraordinarily cool things, and expand from the current platform of defence only, but also focus on redressing and revamping Earth's infrastructure with the full might of both EarthForce and society.
 - This creates an opportunity for EarthForce Complex of Offense Contractors, both small and large businesses, to contribute to the assembly of (DOO) operations related to EarthForce's Infrastructure Apparatus within Earth's ecosystem.

(End of Appendix-4)

Appendix-5: Definition of Earth Infrastructure (EI)

Earth Infrastructure (EI) Definition:

Earth Infrastructure (EI) refers to the interlinked systems, projects, structures, and operations—both natural and human-engineered—that collectively enable, facilitate, regulate, and enhance the quality of life, societal function, well-being, and ecological balance on Earth. Positioned as an expansive operational earth entity, it encompasses a broad array of large-scale initiatives that seek planetary betterment, human and animal well-being, and ecological integrity.

In the context of this research, the term "Earth Infrastructure" is defined as the aggregated physical and organizational structures, systems, facilities, and technologies that constitute the essential foundation for the functioning and operation of EarthForce (Ef). These include but are not limited to:

1. **Military Assets:** Tangible property such as weaponry, vehicles, and bases, which are pivotal for EarthForce's operations.
2. **Communication Systems:** An integrated set of tools that facilitate efficient data transmission and reception among EarthForce units and with allied forces.
3. **Logistical Operations:** Systems responsible for the distribution and storage of resources essential for EarthForce, including fuel, food, and medical supplies.
4. **Satellite and Surveillance Infrastructure:** The orbital and ground-based technologies that provide EarthForce with the necessary spatial and environmental intelligence.

5. **Energy Systems:** Sources and storage of energy that power EarthForce's activities, which may include renewable sources to ensure long-term sustainability.
6. **Sphere Protection Measures:** Specialized technologies and systems designed to monitor and protect Earth's various natural spheres such as the lithosphere, atmosphere, and hydrosphere.
7. **Cybersecurity Infrastructure:** Secure digital platforms and technologies that protect against cyber-attacks, ensuring the integrity of EarthForce's operational capabilities.
8. **Human Resources and Training Facilities:** Institutions and programs dedicated to the recruitment, training, and ongoing education of EarthForce personnel.
9. **Global Response Units:** Special teams and technologies prepared for rapid deployment in cases of natural disasters, humanitarian crises, or other global emergencies.
10. **Research and Development Facilities:** Locations where new technologies and strategies are developed, tested, and integrated into EarthForce operations.

The Earth Infrastructure serves as a multi-dimensional support network that not only enhances EarthForce's military capabilities but also contributes to its overarching goals of planetary stability, peacekeeping, and unified global responses. This infrastructure is intrinsically tied to the economic valuation of EarthForce and forms a critical element of the Earth Valuation formula as detailed in this paper.

Below, Provides more context on this Definition, by delving deeper in the range of what is considered Earth Infrastructure (EI).

1. **Constituent Components:**

- Foundational Systems: Includes the planetary and continental systems that enable the existence of life and societal operations, such as hydrological cycles, energy grids, transportation networks, and communication systems.
- Earthwide Operations: Large-scale Continental and Multi-Continental Collaboration projects and initiatives aimed at enhancing human and animal life quality, environmental health, and happiness metrics.
- Human and Animal Well-Being: Explicit focus on improving quality of life, happiness metrics, and well-being for both humans and animals.
- Resource Mobilization: A built-in financial architecture, funded through EarthTax or similar mechanisms, to support large-scale projects and operations.
- Operations and Projects: Includes but not limited to initiatives like ocean cleanup, international highways, and sustainable farming methods.
- Strategic Alliances: Collaborative efforts across continents and potentially involving multi-dimensional entities like EarthForce for achieving common goals in ecology, defense, and innovation.

2. **Functionality and Scope:**

- Domestic and Galactic View: Aims to strengthen Earth's resilience and capabilities to respond to both terrestrial and extraterrestrial challenges.

- Holistic View: Aligns with Earth-centric perspectives based on scientific evidence, engineering, financial instruments, and ethical considerations.

3. Interdisciplinary Nature:

- Engineering & Construction: Involved in land, ocean, and community development.
- Ecology: Works in collaboration with EarthForce within the Ecology Branch for sustainable initiatives.
- Innovation: Intersects with the Innovation Branch of EarthForce to stimulate technological advancements that benefit Earth.
- Crisis Support: Systems and frameworks to support both humanity and animals during global crises.

4. Governance and Management:

- Entrepreneurial Hubs: Incorporates innovation hubs centric to Earth Infrastructure, human well-being, and animal well-being.
- Earth Money Supply (EMS): A specialized financial instrument designed to fund and support Earth Infrastructure projects and initiatives.

5. Examples:

- Environmental restoration projects like ocean clean-ups of all plastics, and rewilding corridors.
- Closed Environment Farming (CEF) to innovate food supply
- Infrastructure projects like international highways, or Dredging the Panama Canal for international ship traffic.
- Community development initiatives such as Earthwide Homeless Resolve and Glamping Corridor for affordable housing.

6. Relationship with Other Terms:

- EarthForce: Earth Infrastructure operates in synergy with EarthForce, especially within its Ecology and Innovation branches. EarthForce provides the will, actions, and resources directed toward preserving and enhancing Earth's ecosystems.
- EarthWorks: Refers to initiatives aimed at upgrading Earth's natural and human-engineered systems as a subset of Earth Infrastructure projects.
- Earth Money Supply (EMS): A dedicated financial framework of instruments to support Earth Infrastructure operations.
- Earth Keepers: Advocates for Earth independence and stewards of Earth Infrastructure.

7. Conclusion:

- "Earth Infrastructure" synthesizes the confluence of engineering, environmental science, economics, governance, and ethics to create a holistic framework for planetary stewardship and well-being.

(End of Appendix-5)

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