

# Ensuring food security in time of crisis – Situational analysis of conflict areas in Asia Pacific regions

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By 2050, it is projected that the Earth will accommodate two billion more people than it does today. However, numerous crisis situations hinder meeting these growing needs. Factors such as political instability, agricultural decline, rapid population growth, and climate change contribute to escalating food insecurity. With a swelling population and diminishing agricultural land, the imperative to comprehend and address food security has never been more urgent. It is crucial to devise options for individuals living in crisis to ensure equitable access to nutritious food.

According to the 1996 World Food Summit, food security is characterized by all people having consistent access to sufficient safe and nutritious food that meets their dietary requirements and preferences for maintaining an active and healthy lifestyle. Based on this definition, the World Bank identifies four primary dimensions of food security:

**Physical availability of food**: Ensuring that food is accessible and meets the needs of the populace. This involves adequate production, supply, and stock of food for the general population.

**Economic and physical access to food**: Availability alone does not suffice; individuals must also have the economic means to afford food. Achieving household-level food security necessitates economic access to food, considering factors such as household incomes, expenditure, market dynamics, and price rates.

**Food utilization**: Individuals should be able to consume food and derive its nutritional benefits. Food consumption should align with dietary requirements to support a healthy lifestyle, reflecting the nutritional status of the population.

**Stability of the other three dimensions over time**: It is essential for the availability, access, and utilization of food to remain consistent over time. Even if food intake meets current needs, uncertainty about future access signifies food insecurity. Unforeseen circumstances such as adverse weather conditions, political instability, or economic factors like unemployment and rising food prices can disrupt food security.

Food security has emerged as a global challenge because while everyone requires food, access to it is not equitable. Food security is intertwined with economic, political, and societal aspects. Various factors including population growth, climate change, shifting preferences, water scarcity, and agricultural decline contribute to food insecurity. Addressing these multifaceted challenges requires concerted efforts across sectors to ensure a sustainable and equitable food system for all.

## Importance of food security and its impact

- a. Fundamental to human life
- Sustaining life

Nutritious food stands as a fundamental necessity for human survival and sustenance. Hunger and inadequate nutrition can yield devastating consequences, often resulting in fatalities, particularly among children. Despite living in a world of plenty, approximately 9 million individuals succumb to hunger-related causes each year.<sup>1</sup> Poor nutrition and hunger are responsible for the death of 3.1 million children every year.<sup>2</sup>

• Promoting good health

<sup>&</sup>lt;sup>1</sup> <u>https://www.wfp.org/news/world-wealth-9-million-people-die-every-year-hunger-wfp</u>

<sup>&</sup>lt;sup>2</sup> <u>https://www.theworldcounts.com/challenges/people-and-poverty/hunger-and-obesity.</u>

Food security plays a pivotal role in maintaining the health and well-being of individuals. It fosters physical and cognitive development, bolsters immune systems, and serves as a bulwark against malnutrition, fortifying individuals against diseases. However, the data reveals a stark reality: food-insecure populations grapple with issues such as stunting, wasting, and micronutrient deficiencies, which not only escalate healthcare expenses but also curtail individuals' potential. The staggering statistic that 39 million children under the age of 5 were overweight or obese in 2020 underscores the undeniable impact of food security on nutritional status and health.<sup>3</sup>

## b. Socio economic benefits

## • Economic growth

A population that enjoys food security is inherently more productive. Access to nutritious and balanced diets translates to better health, education, and skills, enabling individuals to make significant contributions to the economy. This drives development and serves as a potent mechanism for poverty reduction. Sustainable economic progress hinges on enhancing food security, ensuring that all individuals can actively participate in and contribute to economic development. Moreover, high rates of malnutrition exact a significant toll on economic productivity. According to the UN Food and Agriculture Organization, malnutrition can lead to a loss in gross domestic product (GDP) ranging from 4 to 5 percent. This underscores the critical importance of prioritizing food security initiatives to bolster economic growth and prosperity <sup>4</sup>.

# Social stability

Hunger and malnutrition often lead to conflict as people fight for food access, fueling instability. In contrast, food security fosters stability and peaceful communities. Conflict can exacerbate food insecurity, creating a vicious cycle of instability and violence. Prioritizing access to food and promoting peace are vital in breaking this cycle.

# • Environment sustainability

Adopting sustainable agriculture practices not only promotes food security but also safeguards the environment by conserving resources and biodiversity for future generations. When everyone has access to food and resources are utilized efficiently without overexploitation, it fosters environmental sustainability.

## c. Additional benefits

# • Reduced healthcare costs

Food security is crucial for enabling individuals to lead healthier lives. Research indicates a correlation between food insecurity and adverse health outcomes, including delayed development in young children, heightened risk of chronic illnesses such as asthma and anemia, and behavioral issues like hyperactivity, anxiety, and aggression in school-age children.<sup>5</sup> These

<sup>&</sup>lt;sup>3</sup> <u>https://www.who.int/news-room/fact-sheets/detail/obesity-and-overweight</u>

<sup>&</sup>lt;sup>4</sup> <u>https://www.ifpri.org/blog/food-security-brings-economic-growth-not-other-way-around</u>

<sup>&</sup>lt;sup>5</sup> <u>https://www.feedingamerica.org/hunger-in-america/impact-of-hunger</u>.

health challenges contribute to elevated healthcare costs, further impacting the socioeconomic well-being of individuals.

Better education

Children who experience food security are better able to concentrate and learn effectively. Food security not only promotes improved educational outcomes but also nurtures the development of future generations. Research indicates a significant correlation between household food insecurity and poor school attendance among students, hindering their ability to access quality education.<sup>6</sup>

# Factors leading to food insecurity.

• Population growth -

With continuously growing global population, the demand for food also increases, putting pressure on existing food systems. The world's population is projected to reach 9.7 billion by 2050, requiring a 56% increase in food production compared to 2012 levels.<sup>7</sup>

Economic instability-

Economic instability like downturns, inflation, and unemployment can lead to reduced incomes and decreased access to food, particularly for vulnerable populations. During the 2008 financial crisis, the number of food-insecure people globally increased by 100 million.<sup>8</sup>

Energy security-

Fluctuations in energy prices can affect the cost of food production, transportation, and storage, making food more expensive for common people. Rising energy prices in 2007-2008 contributed to food price spikes in many countries which led to increase in food insecurity.

Conflicts-

Conflict is still the biggest driver of hunger, with 70 percent of the world's hungry people living in areas afflicted by war and violence<sup>9</sup>. Conflicts like wars and civil unrest can disrupt food production and distribution, leading to food shortages and malnutrition among people. In 2020, an estimated 821 million people faced hunger due to conflict and instability.<sup>10</sup>

• Covid 19 pandemic-

The pandemic disrupted food supply chains, caused job losses, and increased food insecurity, particularly in low- and middle-income countries. In 2020, the number of people facing food insecurity globally increased by up to 132 million due to the pandemic.<sup>11</sup>

<sup>&</sup>lt;sup>6</sup> <u>https://agricultureandfoodsecurity.biomedcentral.com/articles/10.1186/s40066-016-0083-3</u>

<sup>&</sup>lt;sup>7</sup> https://www.fao.org/fileadmin/templates/wsfs/docs/expert paper/How to Feed the World in 2050.pdf

<sup>&</sup>lt;sup>8</sup> <u>https://reliefweb.int/report/world/knowing-better-responding-worse-how-mistakes.</u>

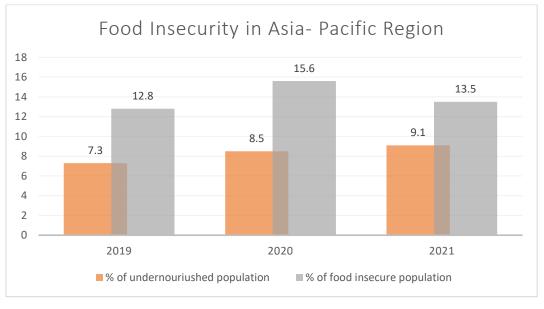
<sup>&</sup>lt;sup>9</sup> <u>https://www.wfp.org/global-hunger-crisis</u>

<sup>&</sup>lt;sup>10</sup> <u>https://www.un.org/en/un-chronicle/path-peace-starts-food</u>.

<sup>&</sup>lt;sup>11</sup> <u>https://www.fao.org/newsroom/detail/un-report-global-hunger-sofi-2022-fao/en</u>

# Climate change-

Rising temperatures disrupt weather patterns leading to frequent and intense droughts, floods, and storms<sup>12</sup>. These extremes reduce yields by up to 20% in some regions. Meanwhile, water scarcity intensifies, disturbing irrigation and further decreasing agricultural productivity. This leaves millions, particularly in vulnerable regions, struggling to afford enough to eat. In 2022 alone, climate factors led to a surge in food insecurity, pushing an estimated 30 million additional people towards hunger. The grim reality is that climate change isn't just warming the planet – it's putting food security on the menu of global crises<sup>13</sup>.



## Food insecurity in crisis zones in Asia Pacific regions



As many as 783 million people are facing chronic hunger.<sup>15</sup> The food security situation in crisis zones of Asia Pacific is dire, with several countries facing multiple challenges that compound the issue. In Asia Pacific region, data reveals millions experiencing hunger and malnutrition, which shows that it requires immediate and targeted interventions. Addressing conflicts, strengthening economies, adapting to climate change, and improving data collection are crucial steps to mitigate the crisis and build resilience for the future.

<sup>&</sup>lt;sup>12</sup> <u>https://climate.ec.europa.eu/news-your-voice/news/how-climate-change-disrupting-rainfall-patterns</u>.

<sup>&</sup>lt;sup>13</sup> <u>https://www.climaterealityproject.org/blog/climate-change-and-health-food-security.</u>

<sup>&</sup>lt;sup>14</sup> <u>https://www.fao.org/3/cc3843en/online/sofi-statistics-rap-2022/food-insecurity-experience-scale.html</u>

<sup>&</sup>lt;sup>15</sup> <u>https://www.wfp.org/global-hunger-crisis</u>

Country	Reasons for food insecurity	Rate of food insecurity in 2023	Global Hunger Index Rank in 2023 out of 125 countries
Afghanistan	Economic collapse following the Taliban takeover, persistent scourge of drought, gender inequality	29%	114th
Myanmar	Reduced agricultural production, intensified conflict, Cyclone Mocha, brutal civil war	More than 3%	72nd
Pakistan	economic instability fueled by inflation and currency devaluation leading to limited purchasing power and access to food, climate change with frequent floods and droughts disrupting agricultural productivity	36.9%	102nd
Srilanka	Debt burden and devalued currency triggering food price hikes and shortages, persistent drought	17%	60th

Source: Global Hunger Index, 2023

# A. Afghanistan

Afghanistan stands tragically as a prime example of a nation grappling with severe food insecurity. In 2023, a staggering 45% of its population which is nearly half its citizens face this debilitating reality of hunger and malnutrition. In 2015, 1.5 million people were considered severely food insecure<sup>16</sup>. The economic collapse following the Taliban takeover dealt a crippling blow, disrupting food production and distribution networks. Gender inequality under Taliban leadership could worsen food insecurity for women as well as their families. Globally, women experienced about 10 percent more food insecurity than men in 2020<sup>17</sup>. This, coupled with the persistent scourge of drought, has severely affected Afghanistan's agricultural heartland, reducing crop yields and shrinking food supplies. The consequences are devastating, with malnutrition rearing its ugly head and threatening the lives of countless innocent people. After the US withdrawal and the Taliban takeover of Afghanistan in August 2021, the country has endured an increasingly deadly humanitarian crisis with hunger and malnutrition spiking across the country and 95 percent of households experiencing insufficient food consumption and food insecurity<sup>18</sup>.

Afghanistan's story is a stark reminder of the devastating human cost of food insecurity, urging the international community to step up and offer to help to those desperately clinging to hope in the face of hunger.

<sup>&</sup>lt;sup>16</sup> <u>https://www.wfp.org/news/severe-food-insecurity-rise-afghanistan.</u>

<sup>&</sup>lt;sup>17</sup> https://www.csis.org/analysis/what-taliban-takeover-means-food-security-afghanistan

<sup>&</sup>lt;sup>18</sup> <u>https://www.hrw.org/news/2022/03/01/afghanistan-economic-roots-humanitarian-crisis</u>

## B. Myanmar

Myanmar, a nation once considered food secure, now faces a difficult reality with its current food insecurity situation being critical due to reduced agricultural production in 2022. The intensified conflict, record high food prices and the devastating effects of Cyclone Mocha have led to rise in food insecurity in Myanmar amid the worst humanitarian crisis in its recent history, affecting 10.7 million or one in five people.<sup>19</sup> The brutal civil war disrupts food production and distribution channels, leaving vulnerable communities particularly exposed to hunger. This existing instability further exacerbated by the COVID-19 pandemic, exposed the fragility of Myanmar's food system, and pushed more people to the brink of food insecurity. In the current critical food insecurity situation, an immediate scaling up of ongoing food and livelihood humanitarian assistance to the most vulnerable households is urgently needed. Support for the ongoing 2023 main agricultural season should be provided to farming households to enhance their productive capacity to resolve the problem of hunger.<sup>20</sup>

The combined effects of conflict, disease, and economic difficulties highlight food insecurity in Myanmar, underscoring the urgent need for sustained humanitarian support and peaceful solutions to ensure food security for its people.

## C. Pakistan

While Pakistan may seem relatively stable compared to other crisis zones, food insecurity remains a pressing concern. 20.5% of the population is undernourished in Pakistan. Nearly 10.5 million people (29 percent of the population analyzed) are experiencing high levels of acute food insecurity between April to October 2023<sup>21</sup>. Although Pakistan has become a food surplus country and a major producer of wheat, the national nutrition survey in 2018 showed that 36.9 percent of the population still faces food insecurity. Primarily due to limited economic access by the poorest and most vulnerable group of the population.<sup>22</sup> This vulnerability stems from a variety of factors like economic instability fueled by inflation and currency devaluation leading to limited purchasing power and access to food, particularly for low-income groups. Furthermore, climate change with frequent floods and droughts has been disrupting agricultural productivity and jeopardizing food security for millions.

Pakistan's situation highlights the complex interplay of economic and environmental factors in driving food insecurity, demanding comprehensive solutions that address both immediate needs and long-term resilience.

<sup>&</sup>lt;sup>19</sup> <u>https://www.wfp.org/emergencies/myanmar-emergency</u>

<sup>&</sup>lt;sup>20</sup> <u>https://reliefweb.int/report/myanmar/giews-update-republic-union-myanmar-current-critical-food-insecurity</u>

<sup>&</sup>lt;sup>21</sup> https://reliefweb.int/report/pakistan/pakistan-ipc-acute-food-insecurity

<sup>&</sup>lt;sup>22</sup> <u>https://www.wfp.org/countries/pakistan</u>

#### D. Sri Lanka

Sri Lanka, an island nation once known for its lush landscapes and thriving food system, now faces a concerning food insecurity challenge. As per UN World Food Program's (WFP) report in July 2022, two in five Sri Lankan households are not consuming adequate diets<sup>23</sup>. About 38% of households, or 6.3 million people, were considered moderately or severely food insecure by July 2022 in Sri Lanka<sup>24</sup>. A crippling debt burden and devalued currency have triggered food price hikes and shortages, disproportionately impacting low-income households. Additionally, persistent drought casts a long shadow over agricultural production, hindering crop yields and further exacerbating food scarcity. The rising cost of food in Sri Lanka due to COVID 19 pandemic and Russia's invasion of Ukraine in 2022, has been burdening the entire population, particularly the poor people. In May 2022, the country faced a full-on food crisis which left about 38% of households, or 6.3 million people moderately or severely food insecure by July 2022.<sup>25</sup>

Sri Lanka's plight underscores the devastating consequences of economic instability and climate change on food security, demanding urgent international support and domestic policy interventions to ensure food accessibility for all.

The Asia Pacific region faces a brutal reality where millions of people battle hunger and malnutrition in multiple crisis zones.<sup>26</sup> Data paints a grim picture with 41.5 million additional people plunged into acute food insecurity in 2022 alone, leading to a staggering 69.1 million by year's end<sup>27</sup>. From Afghanistan's 45% grappling with empty stomachs to Sri Lanka's 8.1% struggling with price hikes and drought, each nation presents a unique set of challenges. Difficult situations and brutal conflicts like Myanmar's civil war, crippling economic collapses like Afghanistan's, and the ever-present specter of climate change, unleashing floods and droughts across Pakistan demands immediate and targeted interventions. Addressing conflicts to restore food production and distribution, strengthening economies to empower vulnerable communities, adapting to climate change through resilient agricultural practices, and improving data collection to better understand and respond to needs are all crucial steps. Only through such multifaceted action can we mitigate this crisis and build a world with zero hunger where food security isn't a distant hope, but a lived reality for millions in Asia Pacific.

## Challenges and Limitations of providing food security during crisis.

• Access Constraints:

Conflict is the leading cause of hunger. For those that live in conflict zones, access to employment opportunities is often limited due to violence and insecurity, displacement, loss of land and damage to infrastructure.<sup>28</sup> Reaching isolated or conflict-affected areas with food aid can be extremely difficult due to insecurity, damaged infrastructure, and logistical complexities.

<sup>&</sup>lt;sup>23</sup> <u>https://www.adb.org/news/events/responses-food-insecurity-sri-lanka-way-forward</u>

<sup>&</sup>lt;sup>24</sup> <u>https://www.adb.org/multimedia/partnership-report2022/stories/urgent-response-to-a-food-crisis/</u>

<sup>&</sup>lt;sup>25</sup> <u>https://www.adb.org/multimedia/partnership-report2022/stories/urgent-response-to-a-food-crisis/</u>

<sup>&</sup>lt;sup>26</sup> https://thailand.un.org/en/203655-world-food-day-asia-pacific-region

<sup>&</sup>lt;sup>27</sup> <u>https://reliefweb.int/report/afghanistan/global-food-crisis-impact-asia-pacific-region.</u>

<sup>&</sup>lt;sup>28</sup> https://www.wfpusa.org/articles/fall-impact-update-wfps-response-global-hunger-crisis/

Food becomes a phantom in isolated communities, trapped behind threat of violence Food insecurity in Myanmar has risen sharply amid the worst humanitarian crisis in its recent history, affecting 10.7 million people.<sup>29</sup> Access constraints like damaged infrastructure and insecurity limit the reach for donations or assistance which leaves millions of people hungry and malnourished. Data shows that 41.5 million additional people across Asia Pacific plunged into food insecurity in 2022 alone, largely due to the same obstacles.<sup>30</sup> These numbers are not mere statistics; they represent desperate struggle for survival. In this fight against food insecurity, access is not just a logistical hurdle; it's a matter of life and death, demanding innovative solutions and unwavering commitment to reach every individual.

• Distribution Challenges:

Efficiently distributing food and supplies to large populations in challenging environments can be demanding, requiring robust transportation networks and secure storage facilities. The difficulty in distributing food aid to 396 million people in the Asia pacific region who were undernourished and an estimated 1.05 billion people suffering from moderate or severe food insecurity is huge<sup>31</sup>. In countries like Afghanistan's where refugee camps are overflowing with families building secure storage facilities for tons of food amidst volatile security is a constant struggle. Similarly, in Sri Lanka, crumbling infrastructure and fuel shortages turn delivering food into a challenge with trucks navigating broken roads and long detours. These stark realities reveal the fragility of food security efforts. Bridging this gap requires robust transportation networks, innovative storage solutions, and collaboration with local communities.

- Targeting the Needy: Identifying and prioritizing the most vulnerable populations amidst chaos and displacement can be difficult, potentially leaving some in need without aid. When there's crisis, identifying and prioritizing the most vulnerable from the displacement and chaos becomes a struggle. For example, in Afghanistan, where 29.80 percent of the population faces hunger<sup>32</sup> identifying neediest within this staggering number is a challenge. Women and children, malnourished and vulnerable, struggle to navigate aid queues and the elderly, ostracized by conflict or displacement, are left behind in desperation<sup>33</sup>. This means millions, the most fragile and forgotten, are left to fend for themselves in the crisis areas. Targeting the needy demands innovation, culturally sensitive outreach programs, and collaboration with local groups. It's a constant challenge to break through the chaos, to identify hunger, and ensure that aid reaches every empty stomach, not just the loudest voices.
- Conflict and Instability: Ongoing violence and insecurity can disrupt food aid delivery, endanger aid workers, and undermine long-term development efforts. In Afghanistan, Taliban threats force the suspension of aid operations in entire regions, leaving millions at the mercy of conflict and hunger.<sup>34</sup> This is the harsh reality of conflict and instability it disrupts food aid delivery in

<sup>&</sup>lt;sup>29</sup> <u>https://www.wfp.org/emergencies/myanmar-emergency</u>

<sup>&</sup>lt;sup>30</sup> <u>https://reports.unocha.org/en/country/asia-pacific/</u>

<sup>&</sup>lt;sup>31</sup> <u>https://www.unicef.org/rosa/press-releases/pace-urbanization-quickens-asia-pacific.</u>

<sup>&</sup>lt;sup>32</sup> <u>https://www.macrotrends.net/countries/AFG/afghanistan/hunger-statistics</u>

<sup>&</sup>lt;sup>33</sup> https://www.unhcr.org/publications/unhcr-assistance-older-refugees

<sup>&</sup>lt;sup>34</sup> https://www.rferl.org/a/afghanistan-aid-stopped-taliban-interference/32450825.html

crisis zones across Asia Pacific. Aid workers become targets, food deliveries become pawns in political battles, and long-term development efforts often crumble under the weight of ongoing violence. Breaking this cycle of hunger due to conflicts requires unwavering commitment to protecting aid workers, negotiating access corridors through conflict zones, and investing in conflict resolution efforts. It's a fight not just for food, but for peace itself, a critical step towards achieving sustainable food security in regions plagued by instability.

 Corruption and Mismanagement: In fragile states, corruption or mismanagement can divert food aid from intended beneficiaries, exacerbating hunger and inequality. The World Bank estimates that up to 30% of humanitarian aid globally is lost to corruption, translating to millions of empty stomachs. This theft is a cruel injustice, a betrayal of trust that pushes the most vulnerable further into hunger. Combatting this requires multifaceted solutions: robust monitoring and auditing mechanisms, increased transparency in aid distribution, and empowering local communities to hold authorities accountable. It's a constant battle to ensure that the food reaches its intended recipient, not the greedy hands of corruption. The stakes are high – not just food. There is a serious need to build a future where food security is not a privilege, but a fundamental right for all.

## Best practices to ensure food security during crisis.

• Prioritize Conflict Resolution and Climate Resilience:

Simply growing more food globally will not lead to increased food security in many conflictaffected countries as sustainable access, through either own-production or markets, will not be possible. Economic stresses created through conflict (displacement, losses of homes and productive assets, job loss) are likely to mean that millions of people will have insufficient access to income sources to buy adequate food.<sup>35</sup> In Myanmar, conflict limits WFP reach to 60% of those in need. So it is important to invest in peacebuilding efforts and climate-resilient agricultural practices like Bangladesh's disaster preparedness program, improving long-term food security by addressing root causes.

Nepal is a country in Asia Pacific which has prioritized conflict resolution and that has led to reduced food insecurity. Following the end of the Maoist insurgency in 2006, Nepal embarked on a fragile peace process, promoting social inclusion and political stability. This has contributed to a decline in violence and instability, providing a more conducive environment for agricultural development and food security initiatives.<sup>36</sup>

• Empower Communities and Utilize Technology:

Local communities often understand needs best. In Afghanistan, women's groups are crucial partners for aid distribution. Hence, it is important to train communities in sustainable farming

<sup>&</sup>lt;sup>35</sup> <u>https://www.jstor.org/stable/resrep23139.6?seq=7</u>

<sup>&</sup>lt;sup>36</sup> <u>https://www.usip.org/publications/2017/08/reconciliation-and-transitional-justice-nepal</u>

and income generation. Utilizing mobile apps for targeted aid distribution and blockchain for transparency, like initiatives in India can be very helpful to ensure food security. India's e-Kisan platform provides farmers with real-time information on weather, market prices, and agricultural practices, helping them make informed decisions and improve yields. Additionally, the government's Aadhaar biometric ID system facilitates targeted delivery of food subsidies and social safety nets, reducing leakages and ensuring aid reaches the intended beneficiaries.<sup>37</sup>

• Strengthen Infrastructure and Distribution Networks:

Lack of access disrupts aid delivery. In Sri Lanka, fuel shortages and damaged roads hinder food distribution. So, it is important to invest in robust transportation networks and secure storage facilities like Nepal's community-based storage units. Utilizing drones for remote areas and improve communication systems for coordinated response can highly impact reducing food insecurity.

While some countries in Asia Pacific have implemented elements of effective infrastructure and distribution network improvements, Nepal stands out as a successful example for the region. Nepal prioritized improving roads and bridges, including suspension bridges in remote areas, to facilitate better movement of food aid and resources. During the 2015 earthquake, community-based storage units and communication infrastructure enabled faster and more effective delivery of aid to affected areas in Nepal.

• Foster Data-Driven Decisions and Transparency:

Real-time data on food needs and vulnerabilities is crucial for targeted interventions. In Pakistan, floods displace millions, requiring dynamic data-driven responses. So, it is important to implement robust monitoring and evaluation systems. Utilizing platforms for data sharing and research like regional innovation hubs in Asia Pacific is a burning need to ensure transparency and accountability through community involvement.

Indonesia proactively shares government data on food security issues, promoting transparency and public engagement. This allows civil society organizations and researchers to analyze data and contribute to food security solutions. Similarly, India's Adhaar card system facilitates targeted delivery of food subsidies and social safety nets by reducing leakages and ensuring aid reaches the intended beneficiaries.

<sup>&</sup>lt;sup>37</sup> https://web.umang.gov.in/landing/department/kisan-sarathi.html

## Future directions for research and innovation on food security

The future of food security depends not just on technological advancements, but also on social justice, environmental consciousness, and a commitment to leaving no one behind. The quest for food security demands constant innovation and exploration of new technologies. Here are some directions future research can take:

• Precision agriculture

Hyperlocal data collection with the help of drones, satellites, and sensors to collect real-time data, reveal soil moisture levels, nutrient deficiencies, and pest infestations can help in reducing food insecurity. Similarly, AI-powered decision support systems where AI algorithms analyze the data to guide farmers in optimizing planting times, irrigation strategies, and pest control can also boost food availability.

• Vertical Farming

Optimizing hydroponics and aquaponics closed-loop systems reduce water consumption by up to 95% compared to traditional farming and recycle nutrients effectively. <sup>38</sup>A controlled-environment agriculture (CEA) enables year-round production, independent of external weather conditions.

## Conclusion

Across the vast expanse of the Asia Pacific region, a harsh reality of food insecurity looms large, transcending mere hunger to encompass health, economies, and social stability. The foundation of food security rests on four pillars: availability, access, utilization, and stability. However, factors such as population growth, climate change, economic instability, and the specter of conflict conspire to undermine these pillars.

Take Afghanistan, for instance, where nearly half of the population grapples with hunger, or Myanmar, where civil strife disrupts harvests and distribution channels, leaving the population vulnerable. Pakistan, despite apparent stability, faces economic volatility, leaving millions at risk of food insecurity. Sri Lanka battles crippling debt and climate-related challenges, pushing its people to the brink of food insecurity. Each nation presents its own set of challenges, with factors like conflict in Myanmar, economic collapse in Afghanistan, climate change in Pakistan, and drought in Sri Lanka exacerbating food insecurity.

Addressing this crisis requires multifaceted solutions on various fronts. Prioritizing conflict resolution in Myanmar, enhancing climate resilience in Pakistan, and empowering communities affected by economic collapse in Afghanistan are crucial initial steps. Strengthening infrastructure and distribution networks, ensuring targeted aid reaches the most vulnerable, and leveraging technology for data-driven decisions are essential tools in improving food security. Innovation, including vertical farming and precision agriculture, holds great promise in combating food insecurity.

However, the future of food security hinges on unwavering global commitment and sustained efforts. We must tackle this crisis not only with technology and aid but also with a deep dedication to social justice,

<sup>&</sup>lt;sup>38</sup> <u>https://www.linkedin.com/pulse/resource-efficiency-agriculture-through-aquaponics-</u>.

environmental consciousness, and the firm belief that no one should go hungry. Only then can we forge a future where food security is not a distant aspiration but a lived reality for all in the Asia Pacific region and beyond.

At the Frost and Sullivan Institute, we firmly believe that enhancing public awareness and understanding of food security requires a multifaceted approach. We advocate for the creation of compelling narratives surrounding the issue, ranging from highlighting the human toll of hunger to showcasing innovative solutions. By leveraging diverse channels such as documentaries, media partnerships, interactive educational platforms, and community engagement initiatives, we aim to demystify complex concepts and evoke empathy. Moreover, we prioritize empowering local voices and amplifying the experiences of those directly affected by food insecurity. Through shared knowledge and solidarity, we seek to cultivate transparency through data visualization and promote collaborative research. By fostering a sense of shared responsibility and collective action, we aim to transform public awareness into a potent catalyst for realizing a world where food security is not a privilege but a fundamental right for all.