Food for peace – Discovering corridor of multilateral cooperation though space application

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By

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Flow of Presentation

1. Introduction : Food and Food systems
2. Correlation : Food & Peace
3. Food & Multilateral Cooperation
4. Food & Space Applications
5. Food, Multilateral Cooperation & Peace through Space
6. Findings & Suggestions

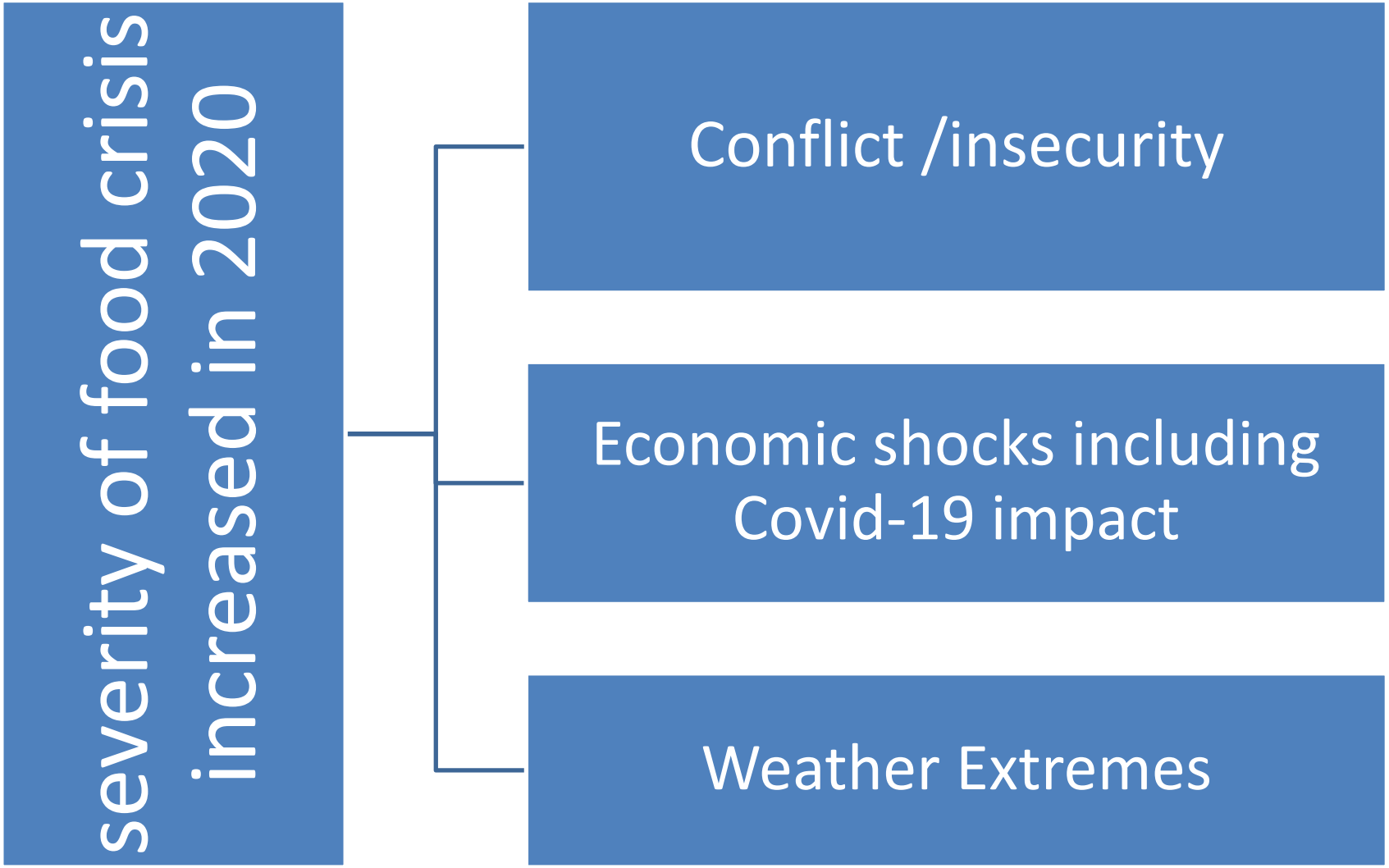
Food and Food systems

- 2021- world's population 7875 millions & counting.
- 2020 -155 million people were acutely food insecure & in need of urgent assistance, in 55 countries/territories that asked for external assistance (the highest level in five years of Global Report on Food Crisis (GRFC) Reporting).
- Struggle to achieve (SDGs) by 2030.

Food system : challenges and impacts

- Increase in Food poverty & under-nutrition
- increase in diet related illness
- Food producers & processors have vulnerable livelihood
- Food systems impacting climate Change & environment
- Increase in food cost, loss of food at various stages of food system.

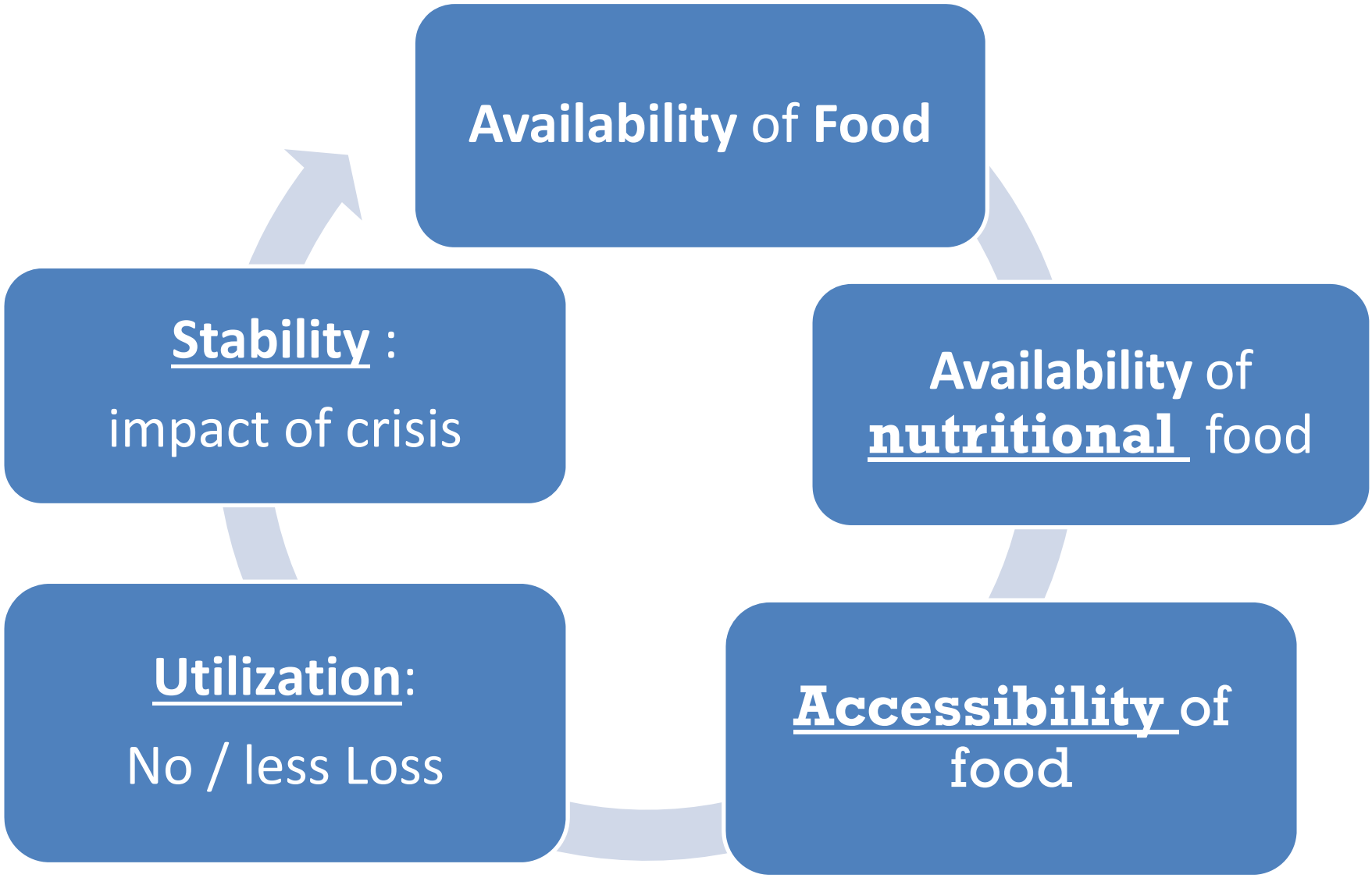
Challenges for food systems



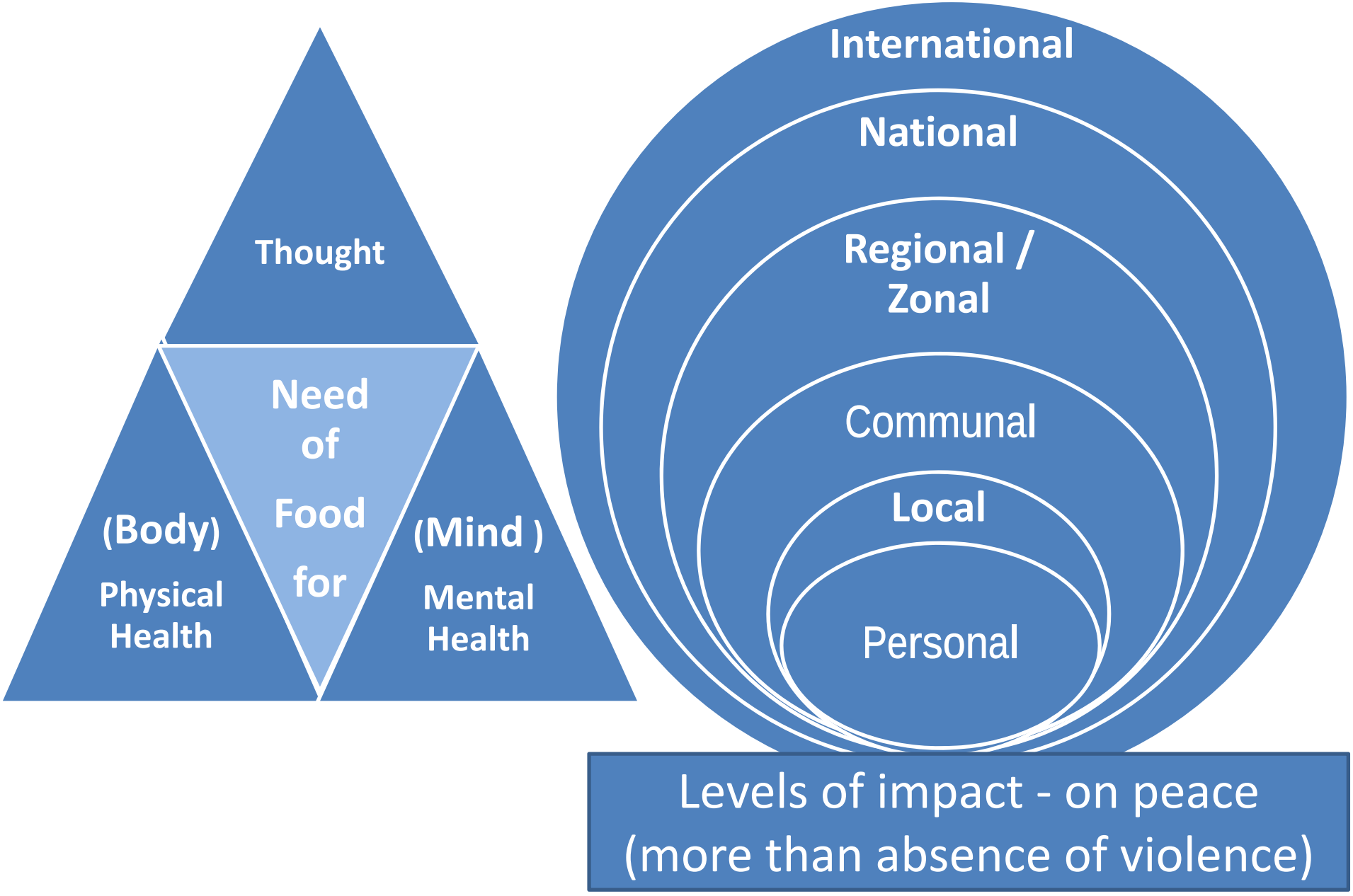
Statement by the Secretary-General of the United Nations, Honorable Antonio Guterres in the Forward of the Global Report on Food Crisis (GRFC) 2021.

"We must do everything we can to end this vicious cycle. Addressing hunger is a foundation for stability and peace. Our blue print is the 2030 agenda for sustainable development and Particularly SDG 2 on zero hunger. Accordingly we need to transform our food systems to make them more inclusive, resilient and sustainable. There is no place for famine and starvation in the 21st century. Together we can end hunger".

Food security components and indicators



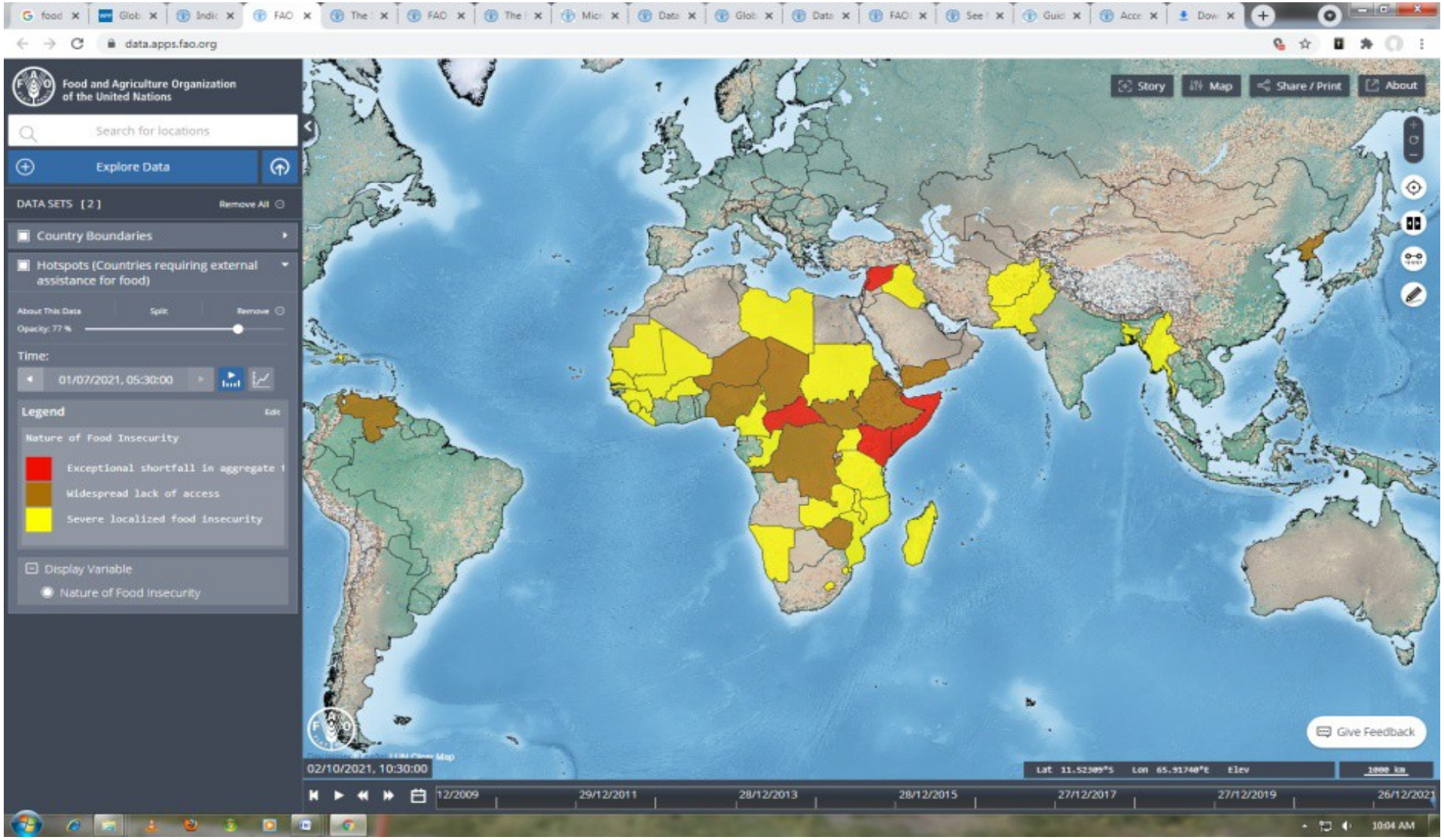
2. Food and Peace



3. Multilateral Cooperation in food

FAO : Special Country Group

Hotspots: Countries requiring external assistance for food.
Red color shows countries with exceptional shortfall,
brown color countries are with widespread lack of access, and
yellow color shows countries with sever localized food insecurity.



To provide enabling environment, assistance, accountability

19 Voluntary Guidelines suggested by FAO in 2004.

Cooperation under guidelines - International Measures, Actions and Commitments :

1. International cooperation and unilateral measures
2. Role of the international community
3. Technical cooperation
4. International trade
5. External debt
6. Official development assistance
7. International food aid
8. Partnerships with NGOs/CSOs/private sector
9. Promotion and protection of the right to adequate food
10. International reporting

4. Food and Space Applications

Space for agriculture development and food security (UNOOSA), UN 2015 (A/AC.105/1042)

No.	Thematic areas
1	Agricultural research and development
2	Biodiversity
3	Desertification
4	Drought
5	Floods
6	Fisheries and aquaculture

No	Thematic areas
7	Irrigation and water
8	Land-use mapping
9	Managing, mitigating & preparing for disasters
10	Monitoring agricultural production
11	Vegetation fires
12	Weather monitoring and forecasting

Thematic areas	Application Of Space Technology	Area Of Operations
1. Agricultural research and develop - ment	Impact of Microgravity environment on plant growth, development & yield (space breeding for crop seeds). Joint Project by the FAO/IAEA- rice of the Pokkali variety sent into space by a Chinese spacecraft.	UNOOSA launched the 'Zero Gravity Instrument Project' under framework of the Human Space Technology Initiative of the United Nations Programme on Space Applications.
2. Biodiversity	Systems for Earth observation and characterization of agro-ecological zones and ecosystems.	Space-derived imagery (mapping) provide information used in direct & indirect approaches for quantifying & modelling biodiversity
3. Desertifica- tion	Space tech offers homogeneity & spatial and temporal coverage of observations & allows the monitoring of desertification processes.	Economic Commission for Latin America & the Caribbean (ECLAC) uses satellite remote sensing data, spatial imagery, and satellite Internet access.
4. Drought	Economic & Social Commission for Asia & the Pacific assists in Applications of Space Technology & Geographic Information System for Disaster Risk Reduction & Sustainable Development for the Asia Pacific Years of Action	Economic & Social Commission for Western Asia (ESCWA) advocated use of space-based technology in water resource management. Satellite Applications used for developing agricultural stress index systems.

Thematic areas	Application Of Space Technology	Area Of Operations
5. Floods	Earth observation data is used extensively to forecast storms, floods, cyclones & to monitor their overall impact on the economy. High-resolution imagery & detailed elevation models generated from satellite imagery & precise global navigation satellite system (GNSS) services can reduce the vulnerability or exposure of urban & rural populations	FAO holds the ARTEMIS satellite based environmental & agro-meteorological databases and analysis tools & assures the documentation metadata and distribution of FAO's spatial information through the GeoNetwork.
6. Irriga - tion and water	high-resolution satellite remote sensing data combined with satellite navigation data are used in precision irrigation & farming techniques. Space provide spatial information regarding water & food production, used for assessing water productivity, evapotranspiration & for identifying irrigated areas.	UNESCO space activities focused on: 1. Global Ocean Observing System (GOOS), implemented by the International Oceanographic Commission (UNESCO-IOC); 2. Earth observation, through the Global Earth Observation (GEO and GEOOS) forums, 3. Support of the activities of the World Heritage Convention with the assistance of a large network of UNESCO space partners.

Thematic areas	Application Of Space Technology	Area Of Operations
7. Fisheries & Aqua culture	Remote sensing tech. used for observation of sea phenomena. Secure satellite communications assist in transfer of information between ships and shore.	Acoustic techniques allow detection and imaging of fish schools at long distances. Improved weather forecasting through the use of meteorological satellites contributes to safety for Fishermen at sea.
8. Land -use mapping	Satellite images enable direct observation of the land surface at repetitive intervals for evaluation. Remote sensing data used.	Over 50 Earth observation satellites, including the Landsat and the Sentinel-2 series, used for monitoring land cover. Some of these are high-resolution (submetre) imagery platforms.
9. Managing, mitigating & preparing for disasters	Satellite navigation & positioning technology used for tracking and tracing food security during disaster and for food delivery.	satellite communications facilitate coordination for each phase of the disaster management, without the need for costly ground - based infrastructure.

Thematic areas	Application Of Space Technology	Area Of Operations
10. Monitor-ing agri-cultural productio n	Spectral analysis of high-resolution satellite images enables the performance of real-time monitoring of crop vegetation, identification and tracking of positive and negative dynamics of crop development.	Timely & reliable national agricultural statistics can be obtained through Space based tech. Earth observation data is used regularly to monitor the crop season, & satellite imagery coverage integrated with field surveys allows the quantification of areas planted & to be harvested during crop seasons.
11. Vegeta-tion fires	The Global Fire Information Management System (GFIMS) addresses these issues by delivering global near real-time fire information to users to support fire managers around the world. It uses remote sensing and GIS technologies	GFIMS is hosted by the Natural Resources Department of FAO and is based on the Fire Information for Resource Management System (FIRMS) developed at the University of Maryland.
12. Weather Monitor -ing & Forecast-ing	monitoring and forecasting is effectively provided by satellite observations, complemented with ground-based weather stations for predicting storms, flooding and frost. Satellite imagery helps farmers plan the timing and amount of irrigation for their crops.	Space-based weather observations are performed by a constellation of geostationary meteorological satellites for permanent monitoring, as well as by a constellation of low-Earth orbit satellites, which are generally near-polar & sun-synchronous for global coverage with a comprehensive suite of active or passive instruments.

The Food Systems Summit: action areas (objectives)	Space for Agri. & Food Security (Identified thematic areas)	Suggestions for efforts
Objective 1: Ensure access to safe & nutritious food for all	1. Agricultural research & development	Promote Technology transfer, knowledge sharing
Objective 2: Shift to sustainable consumption patterns	7.Irrigation & water 8.Land-use mapping	space monitoring - sustainable consumption patterns, identification forecasting, planning, minimizing loss in all stages of foods system (from seeds to finally reaching to consumer)
Objective 3: Boost nature positive production	6.Fisheries & aquaculture 2. Biodiversity	Helping decision making for crop selection, soil quality, water consumption availability options
Objective 4: Advance equitable livelihoods	10.Monitoring agricultural production 12.Weather monitoring & forecasting	Find Remedy to overcome damage due to calamity/dessert locust attack on crops (Africa and Asia).
Objective 5: Building resilience to vulnerabilities, shocks & stresses.	3. Desertification 4. Drought 5. Floods 9. Managing, mitigating & preparing for disasters 11. Vegetation fires	Give Peace a chance. Essential to take warnings seriously & timely actions on it. Need political will power (local & global)

Major UN initiatives using space applications

- United Nations Institute for Training & Research / Operational Satellite Applications Programme (UNITAR / UNOSAT)
- The United Nations Platform for Space-based Information for Disaster Management & Emergency Response (UN-SPIDER)
- The United Nations Programme on Space Applications was established in 1971.
- Monitoring & assessment of Desert locust in Africa & Asia

Desert Locust In Africa and Asia- use of space

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Monitoring and Assessment of Desert Locust in Africa and Asia

- Monitoring Report
  - Monitoring Report 22
  - Monitoring Report 21
  - Monitoring Report 20
  - Monitoring Report 19
  - Monitoring Report 18
  - Monitoring Report 17
  - Monitoring Report 16
  - Monitoring Report 15
  - Monitoring Report 14
  - Monitoring Report 13
  - Monitoring Report 12
  - Monitoring Report 11
- Monitoring Data

Figure 1 Current situation and prediction of desert locust breeding areas and main migration paths in Asia and Africa in 2021 (June to September)

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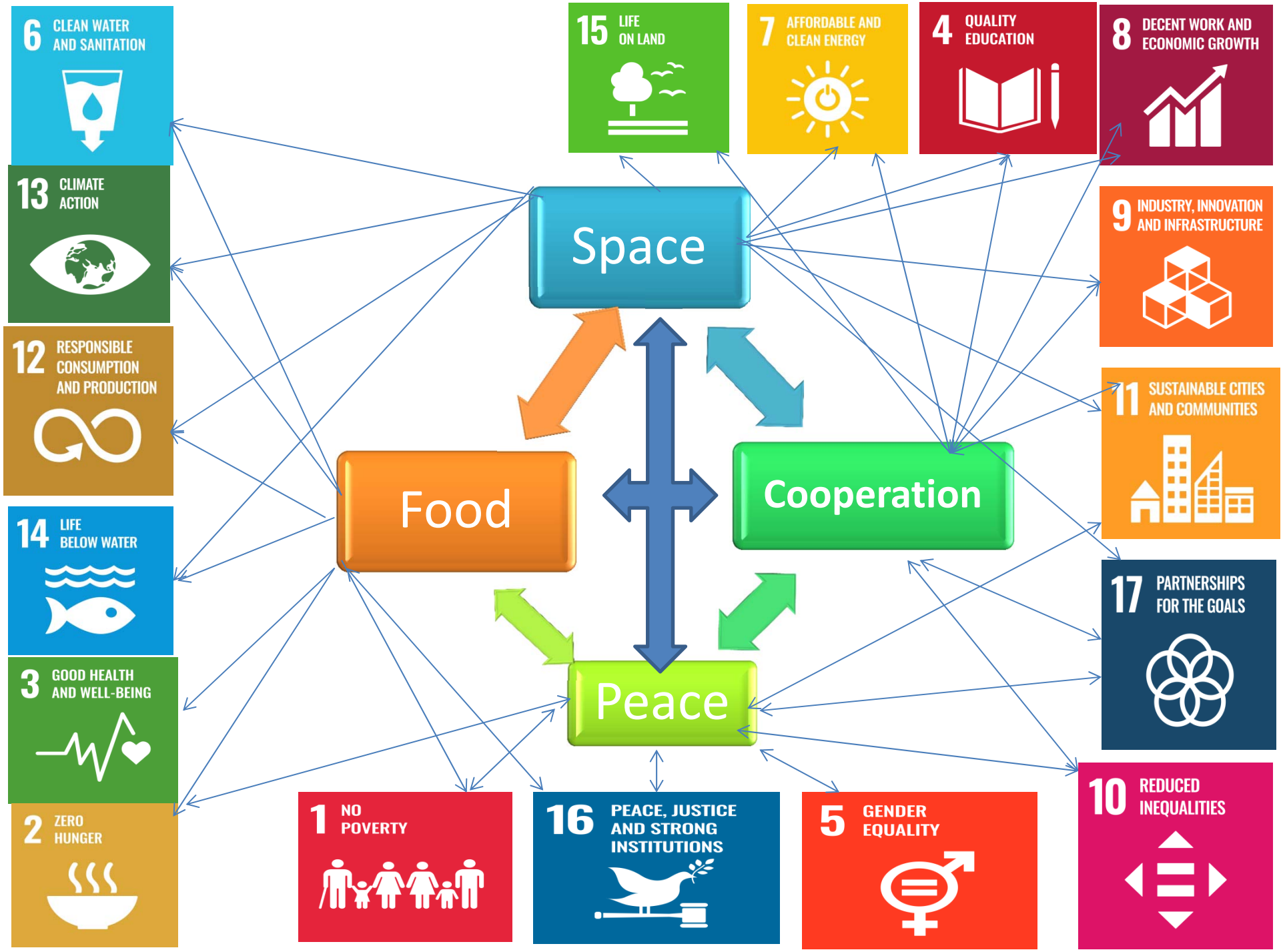
File 1 : Desert Locust Disaster Monitoring and Assessment Report 21.pdf

6. Findings and suggestions

- Correlation of SDGs : Food, Peace, cooperation and Space : Set target 2030
- Peace and Justice: SDG 16, without it other SDGs are unattainable. Priority to SDG 16.
- Right to food with dignity: achieved by 2030
- Food directly related to Health, health (mental & physical) & peace are allied & act interchangeably, achieving either is impossible without the other.
- Proposing a working group on areas of Food, space & cooperation for attaining peace & justice.


6 CLEAN WATER AND SANITATION
13 CLIMATE ACTION
12 RESPONSIBLE CONSUMPTION AND PRODUCTION
14 LIFE BELOW WATER
3 GOOD HEALTH AND WELL-BEING
2 ZERO HUNGER
15 LIFE ON LAND
7 AFFORDABLE AND CLEAN ENERGY
4 QUALITY EDUCATION
8 DECENT WORK AND ECONOMIC GROWTH
9 INDUSTRY, INNOVATION AND INFRASTRUCTURE
11 SUSTAINABLE CITIES AND COMMUNITIES
17 PARTNERSHIPS FOR THE GOALS
10 REDUCED INEQUALITIES
1 NO POVERTY
16 PEACE, JUSTICE AND STRONG INSTITUTIONS
5 GENDER EQUALITY
Space
Food
Cooperation
Peace

6. Findings and suggestions

- Promote Space applications for sustainability: in production, processing and transportation of food.
- Encourage activities for the World Database on Protected Areas (WDPA).
- Effective ways for implementing available infrastructure, legal framework.
- Health & humanitarian issues should be fundamental at national planning & at the heart of the foreign policy & International relations.
- Peace is more than absence of violence & impact directly & indirectly to many aspects of human life.

Conclude: Popular Sanskrit Prayer from India

Meaning:

May all (be sentient) beings be happy,

at peace,

may all be free from illness,

May all see what is auspicious,

may no one suffer.

Om peace, peace, peace!!!

THANK YOU !!!

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