

Humanitarian Aid Cargo Drone

Hunger is an issue the UN is trying to eliminate by 2030. It is estimated that around 309 million people in 71 countries are suffering from hunger, while 40 million are in critical condition and around 1.3 million experience catastrophic hunger, that number is only expected to rise if we do not take drastic measures.

Hunger is caused by many factors. Firstly, today's economy is a big factor. After the pandemic, low- and middle-income countries are still struggling to build their economy. The war in Ukraine played a big role in this as well, because resources like petrol, diesel and other goods were cut short, forcing countries to up the prices.

Climate crisis is another factor causing hunger in many countries. Extreme weather events like wildfires, flooding and temperature rise effects how much food is available. High temperatures damage crops, which leads to a drop in food production and many people are forced to leave their homes and livelihoods.

And thirdly, conflict is the leading cause of hunger today. 135 million people in 20 countries were facing hunger in 2023. Even though, the United Nations Security Council acknowledged the link between conflict and hunger, which condemns the use of starvation as a weapon of war it is still used today. For example, during the war between Israel and Hamas in the Gaza Strip, giving out food and first aid became dangerous for humanitarian workers on the ground. Aid trucks were advised by IDF (Israeli Defense Forces) to turn back. A few times the trucks were also looted by civilians and many people died from being trampled on. In the end all land aid crossings were blocked by Israeli Forces, leaving them with the only option available, delivering by air.

Delivering aids by air seemed the most reasonable thing to do at the time, as IDF blocked ground crossings. Aid trucks were advised to turn back, leaving a large number of people starving. The US in co-ordination with Jordan air dropped 36.000 meals into northern Gaza, where an estimated 300.000 people were living. WFP said that airdrops are seven times more expensive than ground aid. Also, only a small number of aids can be delivered by air in comparison to what a convoy of lorries can deliver. Moreover, drop zones should considerably be large, no smaller than a football field. That brings also a challenge for great air – land co-ordination, which is why they aimed for the Gaza coastline.

On that note, I want to propose my concept. A parachute aid can carry up to 19.000 kilograms of goods. A 44-ton lorry, which is one of the biggest lorries on the market, can carry up to 28.000 kilograms of goods. A convoy of lorries may carry up to 280.000 kilograms of goods, if the convoy consists of 10 lorries. A cargo plane like the Boeing 757 – 200 has a structural payload of 31.750 kilograms, but it is undeniably bigger. I want the cargo drone to be able to carry 30.000 kilograms easily because the main use right now is a lorry. It will have a length of around 40 meters, width of around 35 meters and a height of around 15 meters. The cockpit area will be around 5 meters long, leaving 35 meters of length for cargo space. It will be electric powered with solar energy assistance, four helicopter style rotors and retractable wheels. The cockpit will have 8 seats for the volunteers and a dashboard. It will be fully autonomous because if it isn't then it would need a pilot and not every volunteer can fly a plane.

The drone is designed for companies like WFP, UNICEF, IFRC etc., who help during situations of conflict. The volunteers in these companies are ordinary people from around the world or even from where the conflict is. That is why an autonomous drone would be a great fit. Also, with the space of 8 personnel, it would be easier to give out the goods, in comparison with the lorries where there might be only just the driver who won't even help to give out the goods and there won't be any mayhem between the civilians trying to

grab what they can or take more than they need to, leaving others with nothing. For things to not escalate 2 of the personnel can be UN soldiers to watch the situation from up close. The drone would be landing in open areas, but it won't need a space the size of a football field because it is not like a parachute that the wind can just blow away. It would be able to land closer to the civilians so they do not have to walk a long distance to get to the goods and in case of emergencies the medical aid would not take a long time to get to people in need.

So, my proposal is a plane-sized, drone-looking cargo aircraft that can accurately land at different locations, without the inconvenience of land aid crossings being blocked. It will be electric powered, so it would not have an impact on the environment, propelled by four helicopter like propellers. It would have a cargo capacity of around 30.000 kilograms and be able to travel long distances with a personnel of 8 people.