



Climate change: melting glaciers, diminishing water resources, trapped sunrays increase global warming



HOW A BETTER COLD CHAIN CAN FEED THE WORLD AND YOUR BUSINESS

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The Bad News First

About 1/3 of all food produced globally is lost or wasted = 1.3 billion tonnes per year. And this happens while at the same time the food production will have to grow by around 70% to feed the 2.3 billion additional world population expected by 2050, 85% of which will be concentrated in developing countries.

Focus on reducing food loss and food waste is crucial to manage these challenges with our available resources and without increasing environmental impacts. Food losses and waste also impact on other natural resources, many of which are limited. Water is one of these key related resources and its scarcity is one of the most pressing challenges faced by human populations. The agricultural sector is responsible for 70% of global freshwater withdrawals and 90% of consumptive water uses.

Being Cool: Very Important for the Food Chain

In developing countries 40% of losses occur at post-harvest and processing levels. One of the main reasons: Inadequate storage and transport at all stages of the food chain. Minimizing post-harvest losses is therefore critical and this leads us directly to the start of the cold chain:

Some facts and figures:

- 400 million tonnes of food globally preserved using refrigeration, out of 2000 million tonnes requiring refrigerated processes (2010)
- 23% loss of perishable foods through a lack of refrigeration currently estimated in the developing world
- 2 liters/capita cold storage capacity in Tanzania and Ethiopia, as compared with 53 in Morocco and 344 in the USA
- Less than 4% of India's fresh products are transported under low-temperature conditions, as compared to over 90% in the UK
- China has half the refrigerated vehicles of France but with 20 times of the population of France

These are just some examples to show that cold chains in developing countries and emerging markets are rudimentary or non-existent. An uninterrupted, reliable and energy-efficient cold chain is crucial to ensure food security and food safety. *(Food security and food safety will be probably explained by FAO presentation just before, if not I can add this briefly, see below*).*

Opportunities for the Industry While Protecting the Climate

Cold chain investment is starting to boom in these regions and especially in the emerging markets. The emerging markets boom of the last three decades is a familiar story. Less well known is the surge in cold chain investment and consumption that has been an integral part of the rapid growth in many emerging economies. In China, for example, fridge ownership among urban households rose from 7% to 95% between 1995 and 2007, cold storage capacity soared nine-fold from just 250 million cubic feet to more than 2 billion in the three years to 2010, and is on track to more than double again by 2017. China's cold chain business is reported to be growing at 25% per year and projected to be worth \$75 billion by 2017. Cold chain investment is also booming in India, and annual revenues in the sector are forecast to reach \$13 billion by 2017. This correlation should come as no surprise: as people's incomes rise, they naturally buy the appliances and services that improve the quality, safety and variety of the food they eat.

However, this boom also relies on highly polluting technology in all parts of the cold chain, such as diesel-powered transport refrigeration units, inefficient old supermarket systems, HCFC refrigerants in cold storage and processing facilities, display cabinet etc. Existing HVAC&R installations with equipment based on R22 is usually inefficient and of poor quality and has an influence on the efficiency of the entire cold chain. The need for change and the potential for savings have been identified as large and impactful.

What UNIDO is doing: Search for Solutions

One important point that UNIDO started looking at more closely is the importance of the set-up of cold chains and the communication between the different parts of the chain that includes processing centers, cold storage, supermarket cooling, home fridges and the refrigerated transport between most of these steps. We want to measure and understand where exactly the most energy is used or rather lost also including system design, maintenance and monitoring devices etc. in addition to monitor the actual technology and component performances. The aim is to get a better idea of what are the most efficient and effective interventions that should be made to reduce direct and indirect greenhouse gas emissions. By working together with governments, these results could then be used to develop a standardization scheme and/or minimum requirements for new installations in developing countries.

Several important stakeholders would benefit from this approach:

- **Governments:** To plan their future energy strategy that will have positive influence not just on the environment but also on the economy as it will reveal market opportunities leading overall to a benefit for the society
- **Private sector:** To improve their product portfolio and business strategy by offering more energy efficient products and services, giving the industry also a competitive advantage for the export to neighboring countries and partnership with international companies
- **Financial institutions:** To identify potential and profitable investment projects and sectors

There is GOOD NEWS and Partnerships are the “Key to Success“

The different stakeholders play an important role for the success of such approach. The presentation overall wants to emphasize the importance for the public and private sector to work together and involve each other from the beginning to identify relevant needs and concerns and ensure a long-term impact on the environment, economy and the society overall.

The presentation will end by a call for action/input/partnership to the companies attending to work together on future UNIDO projects with either technology or methodologies which can help in this process and that they have already developed or that they want to support to develop.

*"Food security" = sufficient availability & access to food / "Food quantity":

- Adequacy of food to society, the equitable distribution, confirmed supply, fair access, sustained sources, etc.
- A "secure supply" of food
- Food security does acknowledge the importance of food safety as well
- A functioning cold-chain, prevents food loss and influences food security

"Food safety" = healthy and sustainable food / "Food quality":

- describing handling, preparation, and storage of food in ways that prevent foodborne illness
- safe sources of all foods, no avoidable chemical and microbial contamination
- continuing the appropriate 'cold-chain', safe storage, transportation

