



KUBE Technology™

General summary of solar powered fresh water, electricity, food and medical storage technology developed by DOME KRB

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1.0 KUBE Technology™

1.1 What is KUBE Technology™?

KUBE Technology™ has been developed by DOME KRB to provide clean freshwater, electricity, food and medical storage via solar power technology. The DOME KRB KUBE™ concept was designed to satisfy the demand for basic infrastructure services in the most inaccessible, emergency stricken and polluted areas of the world.

Water Facts

- 3.4 million people die each year from a water related disease - *that is almost the entire city of Los Angeles*
- 780 million people lack access to clean water - *that is more than 2.5 times the size of the United States population or approximately one in nine people*
- Lack of access to clean water and sanitation kills children at a rate equivalent of a jumbo jet crashing every four hours
- Of the 60 million people added to the world's towns and cities every year, most move to informal settlements (i.e. slums) with no sanitation facilities
- The water and sanitation crisis claims more lives through disease than any war claims through guns
- *200 million work hours are consumed by women collecting water for their families*
- 443 million school days are lost each year due to water-related illness
- Diarrhea is the second leading cause of death among children under five in the world. *Around 1.5 million deaths each year - nearly one in five – are caused by diarrhea. It kills more children than malaria, AIDS, and measles combined.*
- Every 21 seconds, a child dies from diarrhea

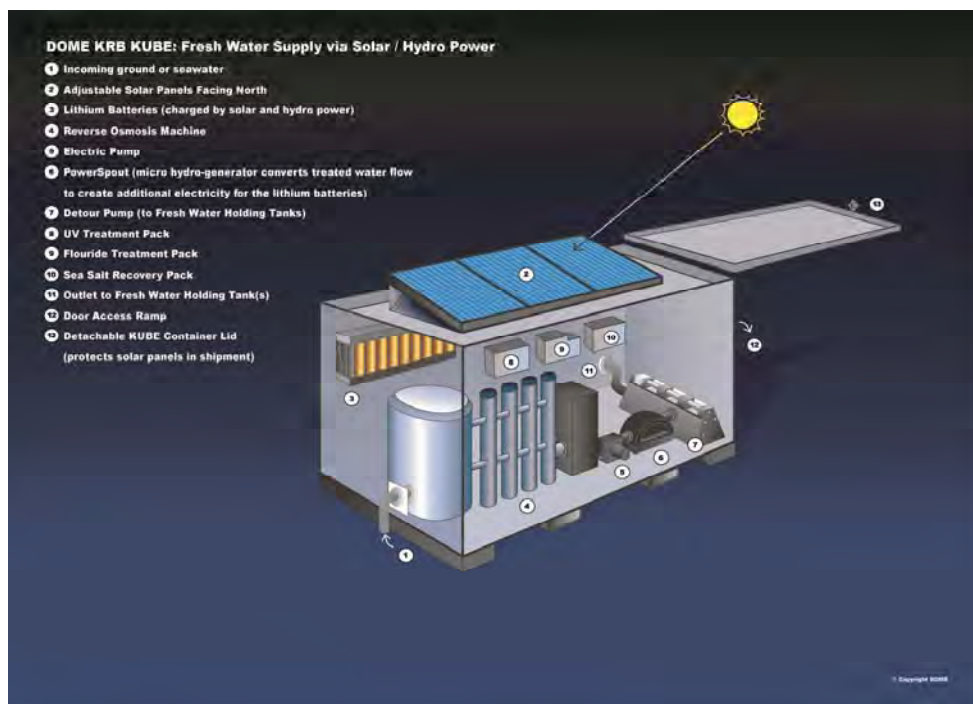
Source: water.org

KUBE Technology™ WILL eliminate these serious health issues



SOLAR KLEEN-WATER KUBE™ - Is a solar powered portable solution for reverse osmosis water treatment of polluted and salt water to produce clean drinking water. Benefits include:

- Solar powered units produce between *2,660 – 3,420 litres per day* of clean drinking water
- All water types, including salt water, contaminated water, and mineral affected water can be processed down to *2 parts per million*.
- Produces a salt by-product which can be used for human consumption from salt water.
- The units are cost effective at between *K70,000 – K140,000 per unit depending upon required quantity and quality of water. This equates to around half a toea per person per litre per day over 10 years.*



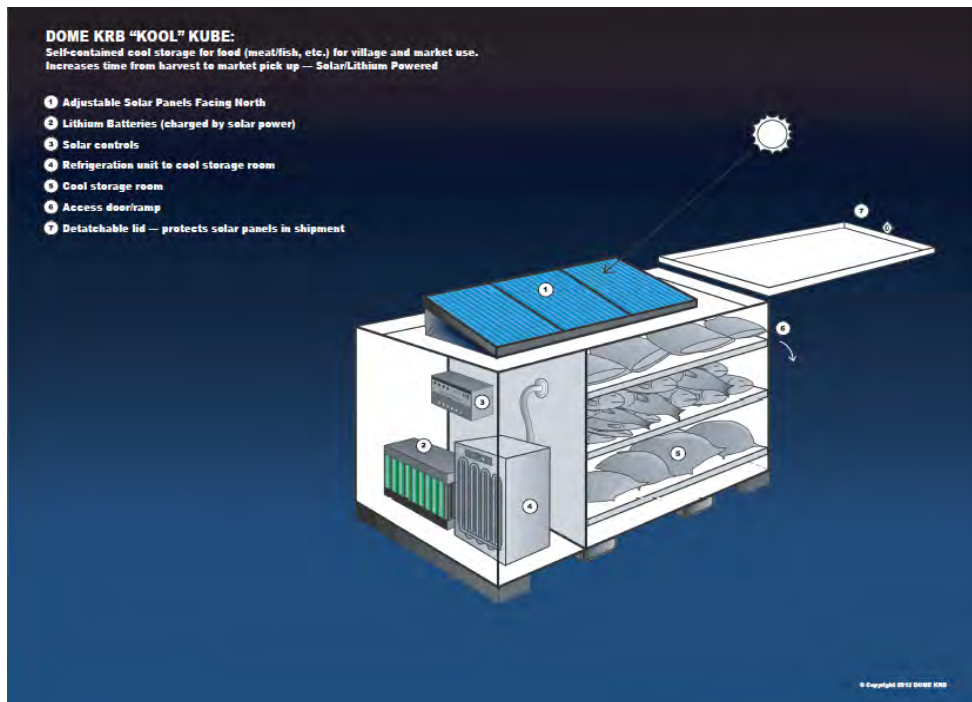
POWERED KLEEN-WATER KUBE™

In addition to the solar powered KLEEN-WATER KUBE™ unit, DOME KRB has developed units which use conventional power sources to process much larger quantities of water via the same reverse-osmosis technology. These KUBES are suitable for larger capacity water requirements such as larger villages, towns, and mining/construction sites providing pure water of all water sources including salt water.

- 240 Volt powered KUBES - 19,000 – 95,000 litres per day
- 3 Phase Power KUBES - 76,000 – 228,000 litres per day
- 460 Volt powered KUBES – 190,000 – 380,000 litres per day

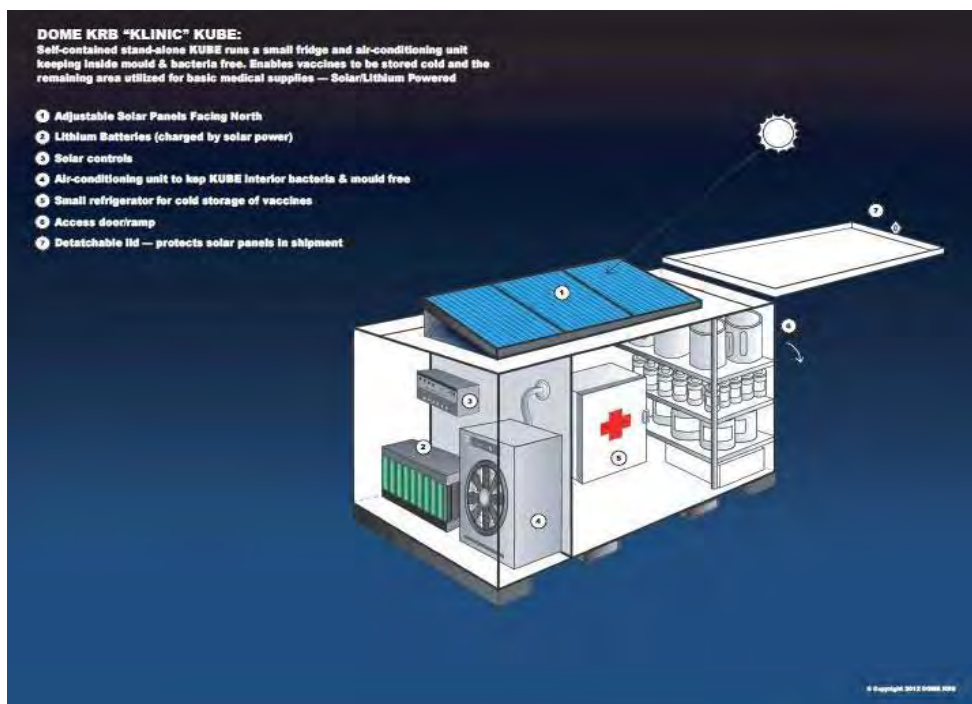
KOOL- KUBE™ - provides solar powered cool storage for the preservation of food. The benefits of this technology include:

- Longevity and preservation of perishable food items for consumption
- Opportunities for villagers to participate in marketing their goods as they can store their food items for sale
- The units are cost effective at between *K80,000 – K110,000 per unit*

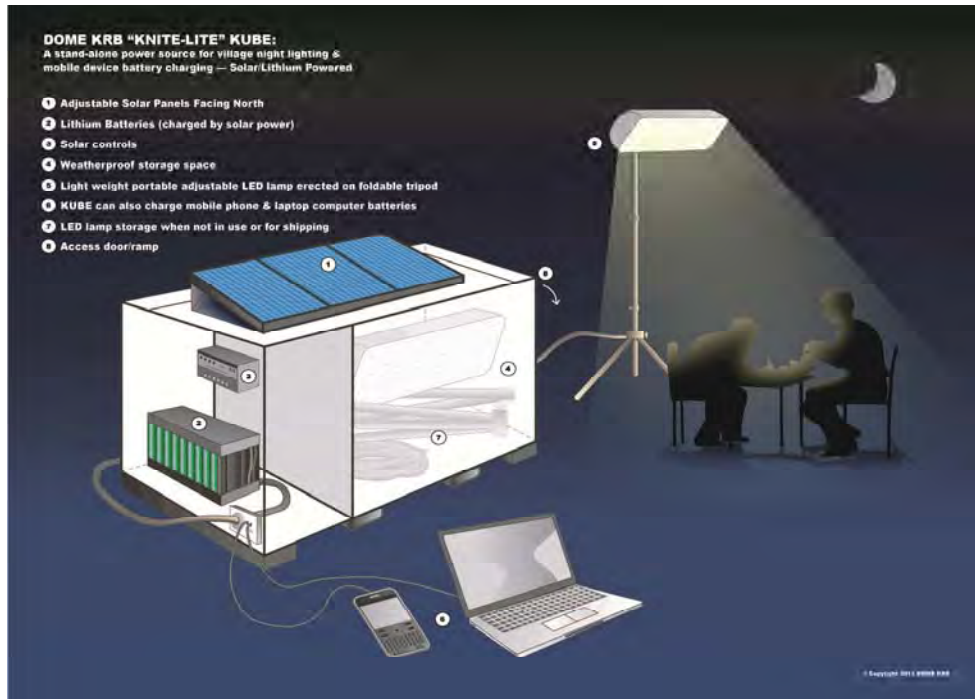


KLINIC- KUBE™- uses solar powered cool storage with a medical grade refrigerator enabling the preservation of vital vaccines and medications not easily accessible in remote districts. The benefits of the KLINIC-KUBE™ include:

- A World Health Organisation (WHO) rated medical refrigeration unit which maintains vaccines and medicines at critical temperatures for up to 4 days without power
- Provides additional storage for bandages, basic medicines and first aid equipment
- Provides freeze dried food with an indefinite shelf life (and over a year once opened) aiding in nutrition for sick people, expectant mothers and children
- The units are cost effective at between *K40,000 – K60,000 per unit*



POWER- KUBE™ - enables a power source for basic lighting, phone and computer/internet usage in the remotest districts. The lithium battery technology within the POWER-KUBE™ ensures performance and reliability providing a power source for remote schools, hospitals and village areas. Improved access to technology such as mobile phones and internet assists in social and economic development in the most remote rural districts throughout the country. The units are cost effective at between *K30,000 – K80,000 per unit based upon power demands*



SOLAR-PUMP KUBE™ – enables water to be pumped from a distant source via solar pumping technology. This provides a maintenance free delivery of water for market gardens, commercial agriculture, bath houses, and hospitals. This technology can pump up to 30,000 litres per day.



1.2 How does KUBE Technology™ align with national development plans?

Vision 2050

Human Development, Gender, Youth and People Empowerment have been identified as a strategic pillar of the Papua New Guinea 2050 Vision. Within this pillar is the goal to drastically increase and improve basic infrastructure such as health and education to empower the people of Papua New Guinea. KUBE Technology™ addresses such needs especially in remote rural districts where basic services are most lacking. KUBE Technology™ leaves a carbon-neutral footprint via the use of solar power, therefore aligning itself with the Environmental Sustainability and Climate Change pillar of the Vision 2050.

UN Millennium Development Goals

KUBE Technology™ is in line with the UN's Millennium Development Goals:





- ✓ KLEEN-WATER KUBE™ produces clean water for human consumption
- ✓ KOOL-KUBE™ provides refrigerated food storage to preserve food over longer periods



- ✓ POWER-KUBE™ provides continuous power to remote areas allowing for implementation of education programs and resources



- ✓ KLEEN-WATER KUBE™ produces clean water allowing children access to safe drinking water
- ✓ KOOL-KUBE™ refrigerated storage provides basic nutritional needs for children
- ✓ KLINIC-KUBE™ provides refrigerated storage for vaccines and medicines allowing for immediate treatment of children



- ✓ KLEEN-WATER KUBE™ produces clean water allowing expectant mothers access to safe drinking water
- ✓ KOOL-KUBE™ refrigerated storage provides basic nutritional needs for expectant mothers
- ✓ KLINIC-KUBE™ provides refrigerated storage for vaccines and medicines allowing for immediate treatment of expectant mothers



- ✓ KLEEN-WATER KUBE™ produces clean water allowing those with diseases access to safe drinking water
- ✓ KLINIC-KUBE™ provides refrigerated storage for vaccines and medicines allowing for immediate treatment of expectant mothers



- ✓ All KUBE Technology™ utilises the latest innovations in solar technology ensuring environmental sustainability

Health, education and poverty reduction are also core themes of Papua New Guinea's other development plans including both the Development Strategic Plan and Medium Term Development Plan. KUBE Technology™ is at the forefront in achieving the goals of such plans.

1.3 What are the benefits of KUBE Technology™?

KUBE Technology™ was designed to satisfy the demand for basic infrastructure services in the most inaccessible, emergency stricken and polluted areas of the world. The benefits of the technology are as follows:

- Access to safe, clean drinking water
- Access to refrigerated food storage
- Access to electricity supply
- Access to refrigerated vaccines, medicine and first aid

KUBE Technology™ is:

- Easily transportable via four-wheel drive or helicopter to the most remote districts
- Self-sufficient using the most advanced solar technology on the planet
- Easily implemented to provide basic infrastructure NOW







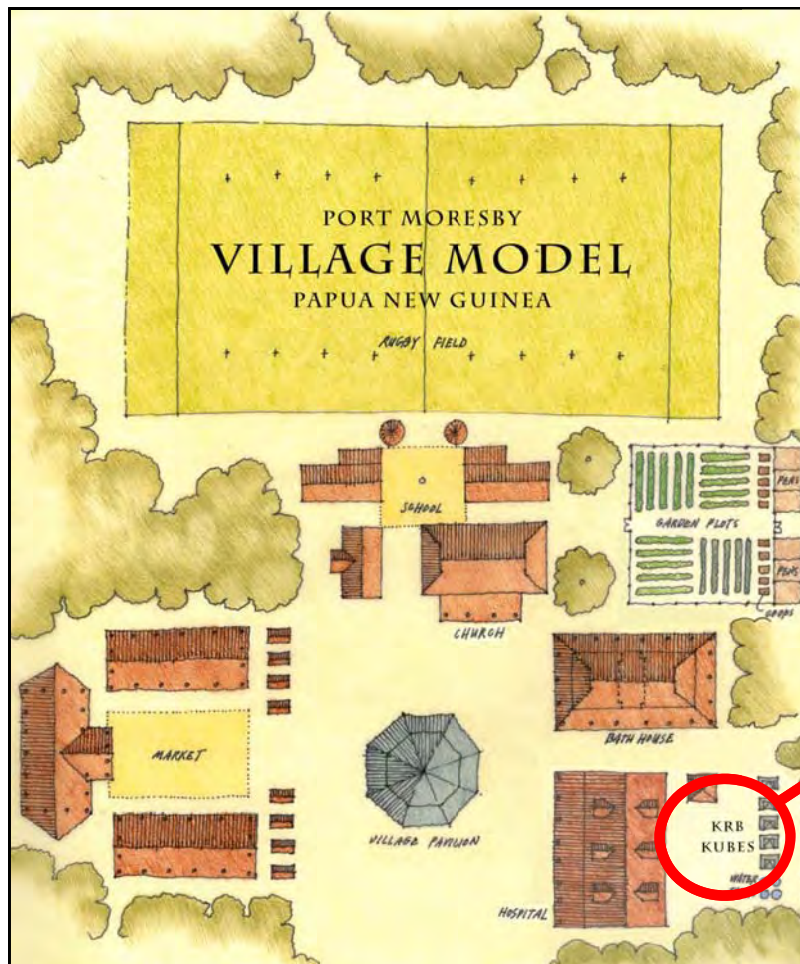


The KUBE™ starting its journey from the snow in Wyoming, USA, to Papua New Guinea

Aids with the development of village out growth centres – DOME KRB's Village Model

KUBE Technology™ allows infrastructure to be implemented into the most remote rural districts *NOW*. The solar powered technology allows for the development of village growth centres without the need for the development of traditional infrastructure such as power grids and road connectivity. KUBE Technology™ will supply:

- Clean water for human consumption and schools
- Food storage for human consumption, trade and hospitals
- Vaccines and medicines for hospitals and aid-posts
- Power sources for village centres, schools and hospitals
- Solar pump KUBE™ will provide a water source for market gardens, bath houses, and hospitals



How KUBE Technology™ can assist with Urbanisation

The movement of people from villages and towns to cities seeking a better quality of life is what is referred to as urbanisation.

What causes Urbanisation?

- Lack of infrastructure and services in rural districts
- Relatively better quality of services in urban areas
- The urban pull/rural push factor

What are the negative effects of Urbanisation?

- Loss of traditional ways of life and village values.
- Uncontrolled growth in urban areas leads to a growing number of settlements. These settlements areas are characterized by disenfranchised, uneducated, and unemployed people; resulting in anti-social behavior and decay of the moral fabric.
- Increased levels of rubbish, raw sewerage and pollution leading to health issues such as HIV/AIDS, TB, and Malaria.
- Maternal health issues and gender related issues such as domestic violence.
- Reduced access to affordable and safe housing.

Papua New Guinea has the largest urban population across the Pacific region, with approximately one million people living in cities. This is expected to grow to 4 million within ten years. The negative effects of urbanisation are clearly evident in major cities such as Port Moresby and Lae. Therefore, careful policy planning, including improving service delivery to the rural districts must be enacted in order to control the urban influx to these cities.

How does KUBE Technology™ help with Urbanisation?

- The KUBE Technology™ delivers basic infrastructure into rural districts. By providing clean water, food storage, power, and medical supplies, the need to seek such services in urban centers is minimised.
- KUBE Technology™ can be implemented now, reducing the need to move to city centers while infrastructure such as roads is delivered to rural districts.
- Traditional village values are maintained, as the younger generations are able to access basic services in the village setting.
- Solar power requires no existing infrastructure to provide basic services. Additionally, solar technology is environmentally friendly, positively contributing to a sustainable Papua New Guinea.

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