



SUDI BAY, TANZANIA

# Sudi Samaki

ICE GENERATION + COLD STORAGE

## BUSINESS PLAN

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JANUARY 2022

THE WORLD LOVES FRESH FISH



FISHERMEN GETTING READY TO LAND THEIR CATCH AT MGAO

## OVERVIEW

Artisanal fishermen contribute a full 95% of the fish production along the coast of Tanzania. Near shore artisanal fishing is carried out from some 210 villages and landing sites along the Tanzanian coast. Catches in the southern regions of Lindi and Mtwara alone are estimated to be in the region of 10,000 tons per year, landed at about 65 sites. None of the landing sites or fish markets in the Southern regions have cold storage, freezing or ice making facilities. As a result, according to research and reports from fishermen and traders, post-harvest losses can reach as high as 45% of the landed catch.

Sudi Samaki is a private SME initiative aimed at mitigating these post-harvest losses by producing flake ice and building a modern cold storage facilities at the fishing village of Mgao in Mtwara.

## LOCATION

Fundamentally, an ice plant should be located where the ice is required. As ice is heavy and melts fast, the site should be chosen to keep logistics, preservation and delivery costs down.

The fishing village of Mgao is strategically located on the south, or Mtwara, side of Sudi Bay. The bay forms a natural border separating Lindi and Mtwara. The village is 3 km further down the road from the Tanzania Port Authority's (TPA) proposed

new cement terminal for Dangote Cement. Though currently connected by a reasonably well maintained gravel road to the B2 national trunk road linking Dar es Salaam to Mtwara, the road is set to be tarred as soon as work on the new cement terminal commences. Mgao is 560 km, or 7 hours by road, from the commercial capital, Dar es Salaam, and 40 km from Mtwara town.

Probably first established as a trading and customs post by the Omani Arabs, the people of Mgao have established themselves as a tightly knit fishing community successful making a living from the pristine coastal waters of southern Tanzania. The village has a population of about 2500 inhabitants, with nearly all families depending on the sea for their livelihood.

Fishermen with canoes (*Mtumbwi*) and *Ngalawa* go out with the incoming tide and return when the tide recedes. Catches are landed daily, albeit in smaller quantities. Bigger boats - Dhows and *Mashua* - can stay out much longer, sometimes camping and fishing in areas as far north as Kilwa, and even south across the border in Mozambican waters, before delivering their catches directly to the landing site at Shangani in Mtwara, or even at Kivukoni in Dar es Salaam. These fishermen process and preserve their fish by salting, smoking, frying and sun drying. Some processes becoming more difficult in the rainy season, which adds to the already high levels of post-harvest loss.



THE NEW MGAO FISH MARKET

There are about 12 big boats based in Mgaao. The reachable fishing grounds are rich in marine resources, and daily catches in excess of 1000 kg are often landed at Mgaao.

The village recently built a small fish market at the landing site, from where catches are sold, usually by auction, to traders. The fish is transported by motorbike and bicycles to be sold at the fish markets in Mtwara, or in some instances, directly to hotels and restaurants in the area. Time lost in transporting fish over poor roads, especially during the rainy season, is a big factor in the deterioration in freshness and condition, which results in reduced market value for the trader.

## FLAKE ICE

Flake ice is the most cost effective type of ice to use for cooling freshly caught fish, and for that matter, any other perishable products. Formed in dry, flat flakes which flow freely and provide greater contact area (1580 sq-m/tonne) than any other type of ice, these thin flakes melt quickly to cool products efficiently. Heat transfer occurs when ice melts, so the faster the ice melts, the faster it draws heat from the product and the faster it cools.

Flake ice is sub-cooled, so it is completely dry. Since there is no free water as with other types of ice, flake ice will not fuse together in a storage bin or clog delivery systems. During storage it forms a thin surface crust, which preserves the

ice for use at a later time. Dry, free-flowing ice flakes are available for immediate use by simply breaking the crust.

Flake ice packs well and cushions the product against damage. It's flat shape does not create indentations and bruising.

In terms of efficiency, flake ice makers recycle all unfrozen water back to the ice maker so no water is wasted. This ensures that all water is converted to ice to conserve water resources.

## ICE TECHNOLOGY

Flake ice will be produced using a Geneglance SAS Pack 21 ice generator spraying fresh or sea-water over the surface of a refrigerated cylinder to freeze it and then mechanically removing the flake ice with a rotating blade. Designed with a stainless steel cylinder and stainless steel water path, the machine is specifically designed for food processing with high hygienic standards. The French manufactured Geneglance Pack 21 operates with R404A refrigerant and is capable of producing 1600 - 2000 kg of high quality flake ice in 24 hours.

## ICE STORAGE + DELIVERY

Ice making and demand rates are seldom in phase. The challenges facing ice making, storage and delivery to artisanal fishermen and trad-



FISHERMEN TENDING TO THEIR ASSETS

ers are irregular ice requirements, with fluctuating peak times determined by tide, and demand for large amounts of ice over a very short period i.e. just before they set out to sea. Therefore, adequate and hygienic storage, with rapid delivery on demand of flake ice to fishermen and traders is critical.

Storage immediately after production will be into a Geneglace SAS S2 2000 kg capacity insulated orbital silo, located directly under the ice generator. The vertical silo, manufactured using food grade roto-moulded polyester, will ensure that the flake ice is stored, in the short term, under ideal hygienic conditions.

Though the initial set-up matches storage capacity with ice generation, provision has been made for a second ice generator to be fitted to the S2 orbital storage silo to increase production. Secondary storage will be in large manually loaded ice bins located within the production facility, or moved for longer term storage into on-site 20' refrigerated containers.

The fully-automated system, located in the orbital silo is capable of delivering ice on the first-in-first-out principle at a speed of 80 kg/minute. Ice will be discharged directly into the fishermen's own storage ice bins using a screw conveyor.

The Geneglace SAS Pack 21 ice generator and S2 Orbital silo, together with its automatic screw delivery, are considered internationally best in class and are designed for continuous 24/7 oper-

ation under the most challenging environmental conditions.

## RESOURCES

As is obviously the case with ice, fresh water is the key resource, followed very closely by a reliable and stable electricity supply.

Mtuwasa delivers good quality Group B water to Mgao from a treatment plant at Hiari. The water is reasonably priced at about TZS 2,000/cu-m, and delivery is reliable. To mitigate the chances of disruption in the water supply, 10,000 litres of fresh water, equivalent to 4 days of ice production, will be stored in two overhead food grade UV treated Polyethylene water tanks. The water required, including other usage at the plant, to produce one tonne of ice is estimated at 1800 litres.

Currently, Tanesco delivers fairly reliable shared three-phase 400V-3-50Hz electricity to the production facility through a recently installed 500 kVA transformer located in the village. A dedicated overhead three-phase LT service line will be installed to supply power directly to the ice making facility at an estimated cost of TZS 19 million (USD 8,500). The cost of T1 electricity from Taneso is currently TZS 300/kWh.

The ice making facility has in place, both a basic solar system for single phase power, and an Atlas Copco QAS 60 three phase generator. The generator is capable of providing 60 kVA of back-up



THE BOATHOUSE, MGAO

power. The generator is wired to automatically start-up in the event the solar power system or Tanesco mains fail.

## ICE FACILITY

The facility will be situated on Plot 2, Block "C", Mgao. The Certificate of Occupancy over this property is held by the investor's brother, Henry Fernandes, and is registered under Title Number 17362 MTWLR, Land Office No. 454715. The property measures 6,031 sq-m and has direct access to the beach reserve, from where fishermen can collect ice. A lease agreement will be concluded with Henry Fernandes to lease a portion of this property for at least five years.

The ice making equipment will be initially housed in an existing structure, known as the Boathouse, on the property. The structures consist of a multi-purpose warehouse type building measuring 192 sq-m, of which 70 sq-m can be used to install the ice making equipment.

The investor has permission to construct a 150 sq-m purpose built ice-making facility on the property when required.

## THE CUSTOMER

Local fishermen and traders are well aware of the advantage fishermen arriving from neighbouring Mozambique with ice on board have over

them at the Shangani fish market in Mtwara. Their ability to keep fish fresh for extended periods of time, or at least until the ice melts, allows them to command much higher prices at the market especially when local supply can't meet demand. Interestingly, when the ice starts melting, the fishermen from Mozambique quickly start dumping any fish they are still holding at cut-throat prices, creating what is in effect a double whammy for local traders.

The primary target market for flake ice will be fishermen and traders in and around the vicinity of Mgao village. Sales to nearby fishing villages and to Mtwara and Lindi fish markets are also possible, but would require delivery to the fish markets or landing sites using small refrigerated vehicles. The financial implications of local deliveries of flake ice are not included in the plan.

However, the single most important factor that must be taken into consideration remains the ability of local fishermen and traders to pay a fair price for ice.

Using one ice generator, and operating six days a week, the retail price of ice produced at Mgao would be in the region of TZS 345/kg (including 18% VAT and 10% profit). This is slightly more than what is charged for block ice in Mtwara at TZS 335/kg, and much less than the cost of block ice in Dar es Salaam at TZS 240/kg. However, the production cost per kilogram will be significantly reduced to as low as TZS 165/kg once the second ice generator is installed and capacity is doubled



PRISTINE MGAO

to 4,000 kg/day. This would translate to a profit margin of about 23% if retailed at Dar es Salaam prices of TZS 240/kg.

Furthermore, though flake ice is known to cool the product more efficiently than either block ice or crushed ice, local fishermen and traders will have to be gradually introduced to the advantages of what, to them, is a relatively new form of ice.

Currently, using traditional methods, fishermen only fish in the reef and near-shore coastal areas, returning once a day to the landing sites to dispose off their catch in a hurry before it spoils. This should soon change as fishermen will be able to stay out a sea for longer periods if they have ice in their holds. They will also be able to venture further offshore into, possibly, more bountiful fishing grounds.

## GROWTH

The ice making and storage facility, once established, would make it very easy for the enterprise to start buying high value fish species such as tuna, dorado, kingfish, emperor fish (*changu*), sea bream, etc., at landing sites or from local fishermen in the area for cleaning, processing and chilling, and then transported fresh, on ice, in refrigerated 2 - 3 tonne delivery vans, or even by air, to the comparatively more lucrative Dar es Salaam or inland markets.

The potential for export has been recently enhanced with the inauguration in 2016 of the new state-of-the-art cold storage facility at Julius Nyerere International Airport (JNIA) in Dar es Salaam. Built specifically to encourage international trade in fish, meat, flowers and vegetables, exports of perishables from JNIA are set to grow in the near future.

## ENVIRONMENTAL

Refrigeration systems are a known major contributor to greenhouse gas emissions. The refrigerant used in the Geneglance Pack 21 ice generator is R404A. It is a HFC blend widely used in low and medium temperature refrigeration commercial applications. Though it has become the widely accepted alternative to the more harmful CFC R502, R404A is coming under greater scrutiny due to its high Global Warming Potential (GWP), leading to an increased focus on lower GWP alternatives such as R407A, R407F and R442A.

### R404A IMPACT

Ozone Depletion Potential (ODP)	0
Global Warming Potential (GWP)3922	
GWP Rating	3

### R404A SAFETY

ASHRAE Safety Group (2013)	A1
ASHRAE Flamability	No
ASHRAE Toxicity	No

Refrigeration is certainly on the list of big things re-



[HEADING HOME](#)

sponsible for global warming, however, as some consolation, it still ranks far behind the coal-fired power plant.

## SUDI SAMAKI

The preferred business entity will be a private company with limited liability and trading under the registered name of Sudi Samaki.

The two founding members and their respective shareholding in the company are Edwin Fernandes (95%) and Fidea Namadengwa (5%). The shareholders are both citizens of Tanzania.

## INVESTMENT

Edwin Fernandes, as the sole investor, will invest the amount of USD 139,285 over first 12 months of the project, and any additional amount needed, to purchase the following capital items. As of January 2021, USD 82,135 has already been spent to buy the first four capital items as listed. Start-up capital to fund operating cost will also be provided by the investor.

1. Geneglance Ice Generator I	23,520
2. Storage Silo	39,200
3. Ancillary fittings	1,890
4. Atlas Copco QAS 60 Generator	17,725
5. LM Green 20' Reefers (x 2)	15,830

6. Dedicated Three Phase LT Line	8,500
7. Insulated Enclosure	7,100
8. Geneglance Ice Generator II	25,520
<b>TOTAL</b>	<b>USD 139,285</b>

All funds are from the personal savings, and profits derived from investments made by Edwin Fernandes over the duration of his career as a business manager in Namibia.

## CONCLUSION

It is obvious, from both best practice and freshfish handling anywhere in the world, that the availability of ice, in commercial quantities, greatly enhances and increase the incomes of fishermen and traders. However, fishermen and traders in the remote and traditional village of Mgao will have to be convinced, probably one at a time, and through incentives, that the benefits of having ice will apply to them as well. The investor has, not only the entrepreneurial desire, but probably more importantly, the patience that will be needed to take up the Sudi Samaki challenge.

**Sudi Samaki**  
ICE GENERATION + COLD CHAIN  
CASH FLOW JANUARY 2022

YEAR 1 (USD\$)	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	Jan-22	Feb-23	Mar-23	Apr-23	May-23	TOTAL
<b>PRODUCTION</b>													
Flake Ice (Kg/Day)	1,600	1,600	1,600	1,600	1,600	1,600	1,600	3,200	3,200	3,200	3,200	3,200	-
Capacity (%)	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	-
Total Flake Ice Produced (Kg)	41,600	41,600	41,600	41,600	41,600	41,600	41,600	83,200	83,200	83,200	83,200	83,200	707,200.00
B/F	-	52	85	(974)	(2,039)	(3,108)	(7,544)	(9,173)	(6,300)	(3,413)	(511)	2,405	
<b>SALES/INCOME</b>													
Flake Ice (ITS 300/Kg excl. VAT)	5,426	5,426	5,426	5,426	5,426	5,426	5,426	10,852	10,852	10,852	10,852	10,852	92,243
Delivery Charges	-	-	-	-	-	-	-	-	-	-	-	-	-
Interest	-	0	0	(5)	(10)	(16)	(38)	(46)	(32)	(17)	(3)	12	(153)
Investment	105,850	-	8,070	-	-	-	25,520	7,915	-	-	-	-	147,355
<b>TOTAL INCOME</b>	<b>111,276</b>	<b>5,426</b>	<b>13,497</b>	<b>5,421</b>	<b>5,416</b>	<b>5,411</b>	<b>30,908</b>	<b>18,721</b>	<b>10,821</b>	<b>10,835</b>	<b>10,850</b>	<b>10,864</b>	<b>92,091</b>



# Sudi Samaki

ICE GENERATION + COLD STORAGE

CASH FLOW JANUARY 2022

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CASH FLOW JANUARY 2022

Toyota SC 4x4 (USD 40,350; 48M; 20% Dep.)	-	-	9,002	932	932	932	932	932	932	932	932	932	14,594
Maintenance + Licenses (Prov.)	30	30		30	30	30	30	30	30	30	30	30	270
Fuel	-	-	160	160	160	160	160	160	160	160	160	160	1,120
INSURANCE													
Capital Items (Fire, Theft + Burglary)	121	121	121	121	153	153	153	153	153	153	153	153	1,644
Toyota Hilux SC 4x4	139	139	139	139	139	139	139	139	139	139	139	139	1,251
ADMIN.													-
Petty Cash	100	100	100	100	100	100	100	100	100	100	100	100	1,200
General Expenses	200	200	200	200	200	200	200	200	200	200	200	200	2,400
Auditors/Accountant	-	-	-	-	870	-	-	-	-	-	-	-	1,740
Bookkeeping Services	-	220	220	220	220	220	220	220	220	220	220	220	2,420
Stationery	43	43	43	43	43	43	43	43	43	43	43	43	516
Bank Charges	25	25	25	25	25	25	25	25	25	25	25	25	300
Cellphone + internet	100	100	100	100	100	100	100	100	100	100	100	100	1,200
<b>TOTAL EXPENDITURE</b>	<b>111,224</b>	<b>5,394</b>	<b>14,556</b>	<b>6,486</b>	<b>32,538</b>	<b>15,848</b>	<b>7,933</b>	<b>7,933</b>	<b>7,933</b>	<b>7,933</b>	<b>7,933</b>	<b>7,933</b>	<b>135,522</b>
MONTHLY SURPLUS/(DEFICIT)	52	33	(1,059)	(1,064)	(1,070)	(4,435)	(1,629)	2,873	2,887	2,902	2,916	(429)	(43,431)
C/F	52	85	(974)	(2,039)	(3,108)	(7,544)	(9,173)	(6,300)	(3,413)	(511)	2,405	1,976	

**Sudi Samaki**  
ICE GENERATION + COLD CHAIN  
CASH FLOW JANUARY 2022

<b>YEAR 2 (USDs)</b>	Jun-23	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24	TOTAL
<b>PRODUCTION</b>													
Floke Ice (Kg/Day)	3,200	3,200	3,200	3,200	3,200	3,200	3,200	3,200	3,200	3,200	3,200	3,200	-
Capacity (%)	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	-
Total Floke Ice Produced (Kg)	83,200	83,200	83,200	83,200	83,200	83,200	83,200	83,200	83,200	83,200	83,200	83,200	998,400.00
B/F	1,976	4,915	7,858	10,816	13,789	16,776	16,419	19,420	22,436	25,467	28,513	31,574	
<b>SALES/INCOME</b>													
Floke Ice (ITS 300/Kg excl. VAT)	10,852	10,852	10,852	10,852	10,852	10,852	10,852	10,852	10,852	10,852	10,852	10,852	130,226
Delivery Charges	-	-	-	-	-	-	-	-	-	-	-	-	-
Interest	20	25	39	54	69	84	82	97	112	127	143	158	1,010
Investment	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>TOTAL INCOME</b>	<b>10,872</b>	<b>10,877</b>	<b>10,891</b>	<b>10,906</b>	<b>10,921</b>	<b>10,936</b>	<b>10,934</b>	<b>10,949</b>	<b>10,964</b>	<b>10,980</b>	<b>10,995</b>	<b>11,010</b>	<b>131,236</b>



**Sudi Samaki**  
ICE GENERATION + COLD CHAIN  
CASH FLOW JANUARY 2022

Petty Cash	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	1,200
General Expenses	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	2,400
Auditors/Accountant	-	-	-	-	870	-	-	-	-	-	-	-	-	-	870	1,740
Bookkeeping Services	220	220	220	220	220	220	220	220	220	220	220	220	220	220	220	2,640
Stationery	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	516
Bank Charges	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	300
Cellphone + Intemet	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	1,200
<b>TOTAL EXPENDITURE</b>	<b>7,933</b>	<b>7,933</b>	<b>7,933</b>	<b>7,933</b>	<b>11,293</b>	<b>7,933</b>	<b>7,933</b>	<b>7,933</b>	<b>7,933</b>	<b>7,933</b>	<b>7,933</b>	<b>7,933</b>	<b>7,933</b>	<b>7,933</b>	<b>11,293</b>	<b>98,138</b>
MONTHLY SURPLUS/(DEFICIT)	2,939	2,943	2,958	2,973	(357)	3,001	3,016	3,031	3,046	3,061	3,076	3,091	3,106	3,121	(283)	33,098
C/F	4,915	7,858	10,816	13,789	16,419	19,420	22,436	25,467	28,513	31,574	34,625	37,676	40,727	43,778	31,291	

**Sudi Samaki**  
ICE GENERATION + COLD CHAIN  
CASH FLOW JANUARY 2022

YEAR 3 (USDs)	Jun-24	Jul-24	Aug-24	Sep-24	Oct-24	Nov-24	Dec-24	Jan-25	Feb-25	Mar-25	Apr-25	May-25	TOTAL
<b>PRODUCTION</b>													
Flake Ice (Kg/Day)	3,200	3,200	3,200	3,200	3,200	3,200	3,200	3,200	3,200	3,200	3,200	3,200	-
Capacity (%)	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	-
Total Flake Ice Produced (Kg)	83,200	83,200	83,200	83,200	83,200	83,200	83,200	83,200	83,200	83,200	83,200	83,200	998,400.00
B/F	31,291	34,523	37,614	40,721	43,843	46,981	46,775	49,928	53,096	56,280	59,480	62,697	
<b>SALES/INCOME</b>													
Flake Ice (ITS 300/Kg excl. VAT)	10,852	10,852	10,852	10,852	10,852	10,852	10,852	10,852	10,852	10,852	10,852	10,852	130,226
Delivery Charges	-	-	-	-	-	-	-	-	-	-	-	-	-
Interest	313	173	188	204	219	235	234	250	265	281	297	313	2,973
Investment	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>TOTAL INCOME</b>	<b>11,165</b>	<b>11,025</b>	<b>11,040</b>	<b>11,056</b>	<b>11,071</b>	<b>11,087</b>	<b>11,086</b>	<b>11,102</b>	<b>11,118</b>	<b>11,134</b>	<b>11,150</b>	<b>11,166</b>	<b>133,199</b>



**Sudi Samaki**  
ICE GENERATION + COLD CHAIN  
CASH FLOW JANUARY 2022

Petty Cash	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	1,200
General Expenses	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	2,400
Auditors/Accountant	-	-	-	-	870	-	-	-	-	-	-	-	-	-	870	1,740
Bookkeeping Services	220	220	220	220	220	220	220	220	220	220	220	220	220	220	220	2,640
Stationery	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	516
Bank Charges	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	300
Cellphone + Intemet	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	1,200
<b>TOTAL EXPENDITURE</b>	<b>7,933</b>	<b>7,933</b>	<b>7,933</b>	<b>7,933</b>	<b>11,293</b>	<b>7,933</b>	<b>7,933</b>	<b>7,933</b>	<b>7,933</b>	<b>7,933</b>	<b>7,933</b>	<b>7,933</b>	<b>7,933</b>	<b>7,933</b>	<b>11,293</b>	<b>98,138</b>
MONTHLY SURPLUS/(DEFICIT)	3,232	3,091	3,107	3,122	(206)	3,153	3,168	3,184	3,200	3,216	3,216	3,216	3,216	(128)	62,569	35,061
C/F	34,523	37,614	40,721	43,843	46,775	49,928	53,096	56,280	59,480	62,697	62,697	62,697	62,697	62,569	62,569	62,569

**Sudi Samaki**  
ICE GENERATION + COLD CHAIN  
CASH FLOW JANUARY 2022

YEAR 4 (USDs)	Jun-25	Jul-25	Aug-25	Sep-25	Oct-25	Nov-25	Dec-25	Jan-26	Feb-26	Mar-26	Apr-26	May-26	TOTAL
<b>PRODUCTION</b>													
Flake Ice (Kg/Day)	3,200	3,200	3,200	3,200	3,200	3,200	3,200	3,200	3,200	3,200	3,200	3,200	-
Capacity (%)	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	-
Total Flake Ice Produced (Kg)	83,200	83,200	83,200	83,200	83,200	83,200	83,200	83,200	83,200	83,200	83,200	83,200	998,400.00
B/F	62,569	66,613	70,365	74,136	77,925	81,734	82,201	86,031	89,380	92,745	96,128	99,527	
<b>SALES/INCOME</b>													
Flake Ice (ITS 300/Kg excl. VAT)	10,852	10,852	10,852	10,852	10,852	10,852	10,852	10,852	10,852	10,852	10,852	10,852	130,226
Delivery Charges	-	-	-	-	-	-	-	-	-	-	-	-	-
Interest	626	333	352	371	390	409	411	430	447	464	481	498	5,210
Investment	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>TOTAL INCOME</b>	<b>11,478</b>	<b>11,185</b>	<b>11,204</b>	<b>11,223</b>	<b>11,242</b>	<b>11,261</b>	<b>11,263</b>	<b>11,282</b>	<b>11,299</b>	<b>11,316</b>	<b>11,333</b>	<b>11,350</b>	<b>135,436</b>



**Sudi Samaki**  
ICE GENERATION + COLD CHAIN  
CASH FLOW JANUARY 2022

Petty Cash	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	1,200
General Expenses	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	2,400
Auditors/Accountant	-	-	-	-	870	-	-	-	-	-	-	-	-	-	-	-	-	870	1,740
Bookkeeping Services	220	220	220	220	220	220	220	220	220	220	220	220	220	220	220	220	220	220	2,640
Stationery	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	516
Bank Charges	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	300
Cellphone + Intemet	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	1,200
<b>TOTAL EXPENDITURE</b>	<b>7,433</b>	<b>7,433</b>	<b>7,433</b>	<b>7,433</b>	<b>10,793</b>	<b>7,433</b>	<b>7,433</b>	<b>7,433</b>	<b>7,933</b>	<b>7,933</b>	<b>7,933</b>	<b>7,933</b>	<b>7,933</b>	<b>7,933</b>	<b>7,933</b>	<b>7,933</b>	<b>7,933</b>	<b>11,293</b>	<b>94,638</b>
MONTHLY SURPLUS/(DEFICIT)	4,044	3,752	3,771	3,789	467	3,830	3,808	3,849	3,366	3,383	3,399	3,383	3,399	3,383	3,399	3,383	3,399	56	40,798
C/F	66,613	70,365	74,136	77,925	82,201	86,031	89,380	89,380	92,745	96,128	99,527	96,128	99,527	96,128	99,527	96,128	99,527	99,584	

**Sudi Samaki**  
ICE GENERATION + COLD CHAIN  
CASH FLOW JANUARY 2022

YEAR 5 (USDs)	Jun-26	Jul-26	Aug-26	Sep-26	Oct-26	Nov-26	Dec-26	Jan-27	Feb-27	Mar-27	Apr-27	May-27	TOTAL
<b>PRODUCTION</b>													
Flake Ice (Kg/Day)	3,200	3,200	3,200	3,200	3,200	3,200	3,200	3,200	3,200	3,200	3,200	3,200	-
Capacity (%)	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	-
Total Flake Ice Produced (Kg)	83,200	83,200	83,200	83,200	83,200	83,200	83,200	83,200	83,200	83,200	83,200	83,200	998,400.00
B/F	99,584	103,798	107,736	111,694	115,671	119,668	120,325	123,845	127,383	130,939	134,513	138,104	
<b>SALES/INCOME</b>													
Flake Ice (ITS 300/Kg excl. VAT)	10,852	10,852	10,852	10,852	10,852	10,852	10,852	10,852	10,852	10,852	10,852	10,852	130,226
Delivery Charges	-	-	-	-	-	-	-	-	-	-	-	-	-
Interest	996	519	539	558	578	598	602	619	637	655	673	691	7,664
Investment	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>TOTAL INCOME</b>	<b>11,848</b>	<b>11,371</b>	<b>11,391</b>	<b>11,411</b>	<b>11,431</b>	<b>11,451</b>	<b>11,454</b>	<b>11,471</b>	<b>11,489</b>	<b>11,507</b>	<b>11,525</b>	<b>11,543</b>	<b>137,890</b>



**Sudi Samaki**  
ICE GENERATION + COLD CHAIN  
CASH FLOW JANUARY 2022

Petty Cash	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	1,200
General Expenses	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	2,400
Auditors/Accountant	-	-	-	-	-	870	-	-	-	-	-	-	-	-	-	870	1,740
Bookkeeping Services	220	220	220	220	220	220	220	220	220	220	220	220	220	220	220	220	2,640
Stationery	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	516
Bank Charges	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	300
Cellphone + Internet	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	1,200
<b>TOTAL EXPENDITURE</b>	<b>7,633</b>	<b>7,433</b>	<b>7,433</b>	<b>7,433</b>	<b>7,433</b>	<b>10,793</b>	<b>7,933</b>	<b>7,933</b>	<b>7,933</b>	<b>7,933</b>	<b>7,933</b>	<b>7,933</b>	<b>7,933</b>	<b>7,933</b>	<b>7,933</b>	<b>11,293</b>	<b>95,338</b>
MONTHLY SURPLUS/(DEFICIT)	4,215	3,938	3,957	3,977	3,997	657	3,520	3,538	3,556	3,573	3,591	3,591	3,591	3,591	3,591	249	42,553
C/F	103,798	107,736	111,694	115,671	119,668	120,325	123,845	127,383	130,939	134,513	138,104	138,104	138,353	138,353	138,353	138,353	

## NOTES

NOTE 1. Flake Ice Sales

Income from the sale of flake ice is taken at of TZS 300/kg (excl. VAT).

NOTE 2. Delivery Charges

Delivery costs and charges are not taken in to account in the cashflow.

NOTE 3. Investment

These are ongoing investments by the investor to finance the deficit between income and expenditure.

NOTE 4. Dedicated Three Phase LT Line

Tanesco charges for providing a dedicated overhead LT line linking the ice making facility to the 500 kVA transformer located in the village.

NOTE 5. Insulated Enclosure

An insulated and temperature controlled enclosure will be built to cold room standards.

NOTE 6. Staff Remuneration

Apart from the Manager, seven staff will be employed on the project. Recruited and trained, as far as possible, from the community.