IMPACT INVESTMENT FOR ARUBA

CLIMATE CHANGE CHALLENGE

VERTICAL FARM IN ARUBA

EXECUTIVE SUMMARY.

OUR PROPOSED VERTICAL FARMING PROJECT AIMS TO REVOLUTIONIZE THE AGRICULTURAL INDUSTRY IN THE CARIBBEAN,

WITH ARUBA BEING **THE FIRST** TO TAKE THE LEAD,

BY UTILIZING ADVANCED TECHNOLOGY AND SUSTAINABLE PRACTICES.

PROJECT COST

WE PRESENT TO YOU A PROJECT IN VERTICAL FARMING ON ARUBA

WITH THE AIM OF CREATING A POSITIVE ENVIRONMENTAL FOOTPRINT

WE REQUIRE A LAND PARCEL BETWEEN 51,000 M2 AND 160,000 M2 IN SIZE ON ARUBA TO MAXIMIZE THE IMPACT OF OUR INVESTMENT

INITIALLY, THE GROUND SURFACE DEDICATD TO VERTICAL FARMING WILL BE 10,000 M2 (EQUIVALENT TO 40,000 M2 OF GROWTH AREA), WITH THE POSSIBILITY OF EXPANDING IT TO 30,000 M2 (EQUIVALENT TO 120,000 M2 OF GROWTH AREA)

MARKET ANALYSIS

OUR VERTICAL FARMING PROJECT ADDRESSES SEVERAL KEY MARKET TRENDS AND DEMANDS AND CAN CONTRIBUTE TO ARUBA'S ISLAND ECONOMY BY:

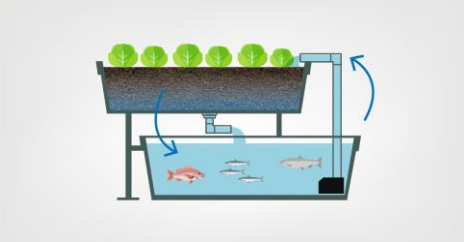
- MAXIMIZING FOOD SECURITY THROUGH THE YEAR-ROUND CULTIVATION OF FRESH PRODUCE THAT RETAINS 100 % NUTRIENT CONTENT.
- GROWING CONSUMER PREFERENCE FOR LOCALLY SOURCED, ORGANIC ,SUSTAINABLE PRODUCED CROPS AND REDUCE WASTE
- REDUCING DEPENDENCE ON IMPORTED FOOD DURING PANDEMICS, CLIMATE CHANGE OR DISASTERS.
- IMPLEMENTING MEASURES TO DECREASE THE EMISSION OF CO2 BY 70 %
- THE NEED TO REDUCE WATER CONSUMPTION IN TRADITIONAL FARMING METHODS.(-/- 90%)
- CREATING EMPLOYMENT OPPORTUNITIES IN HORTICULTURE TECHNOLOGY AND MANAGEMENT.
- GENERATING INCOME THROUGH POTENTIAL EXPORT OF SURPLUS AGRICULTURE PRODUCE.
- INTEGRATING VERTICAL FARMING INTO TOURISM, ATTRACTING VISITORS AND BOOSTING REVENUE.

PROJECT TIMELINE

THE PROJECT TIMELINE IS AS FOLLOWS:

- **JULY 2024**: ACQUIRING 160,000 M2 OF LAND OF WHICH 30,000 M2 IS RESERVED FOR VERTICAL FARMING
- **AUGUST 2024**: INITIATE LAND PREPARATION, INCLUDING LAND, INFRASTRUCTURE SETUP, ACQUIRE PERMITS AND RESOURCE PLANNING.
- **OCTOBER 2024**: START SELECTING FARMERS AND TRAINING LOCALLY AND ABROAD
- **NOVEMBER 2024**: COMMENCE BUILDING CONSTRUCTION AND VERTICAL FARMING SYSTEM INSTALLATION
- **MAY 2025** : PROJECT COMPLETION, START OF CROP CULTIVATION, AND SALES

VERTICAL FARM FACTS & FUTURE 2023 VS 2028



THE GLOBAL VERTICAL FARM MARKET:

- 2023 5.0 USD BILLION
- 2028 15.3 USD BILLION
- CAGR 24.7 %
  - Due to increase of investments
- HYDROPONICS CAGR 7.2 %
- AQUAPONICS CAGR 9.5 %
- AEROPONICS CAGR 11.3 %
- BY GROWTH MECHANISM (USD MILLION)
  - 5,064 → 15,255
- BY REGION (USD MILLION)
  - NORTH AMERICA 909 → 2,472
  - EUROPE 813 → 2,051
  - RoW 462 → 1,442
- BY CROP TYPE (MILLION METRIC TONS)
  - LETTUCE 0.54 → 2.01
  - TOMATOES 0.23 → 1.08
  - STRAWBERRIES 0.08 → 0.36
  - HERBS 0.13 → 0.58

CAGR = Compound Annual Growth Rate

WHY ARUBA?

- LOCAL FOOD PRODUCTION
- CLIMATE RESILIENCE
- TOURISM AND LOCAL PARTNERSHIPS
- GIVING BACK TO THE COMMUNITY
- ECONOMIC DIVERSIFICATION OPPORTUNITIES
- INCREASED FOOD PRODUCTION AND SECURITY
- EDUCATIONAL AND RESEARCH OPPORTUNITIES

LOCAL FOOD PRODUCTION

ARUBA HEAVILY RELIES ON IMPORTED FOOD, LEADING TO HIGH COSTS AND POTENTIAL SUPPLY CHAIN DISRUPTIONS.

VERTICAL FARMING CAN HELP COUNTER THIS DEPENDENCY BY ENABLING LOCAL FOOD PRODUCTION OF FRESH FRUITS, VEGETABLES, MICRO GREENS, FISH AND HERBS.

BY BRINGING FOOD PRODUCTION CLOSER TO THE CONSUMERS, VERTICAL FARMING CAN SHORTEN SUPPLY CHAINS, PROMOTE SELF –SUFFIENCY, REDUCE TRANSPORTATION -RELATED CARBON EMISSIONS, REDUCE WASTE AND EXCLUDE THE USE OF PESTICIDES

CLIMATE RESILIENCE

REDUCED DEPENDENCY ON OUTDOOR CONDITIONS: VERTICAL FARMING ALLOWS CROPS TO BE GROWN INDOORS IN A CONTROLLED ENVIRONMENT YEAR-ROUND AND USING 90 % LESS WATER AND NO NEED FOR PESTICIDES

THIS ELIMINATES THE RELIANCE ON FAVORABLE WEATHER CONDITIONS, PROTECTING CROPS FROM EXTREME HEAT, COLD, DROUGHT, STORM OR HEAVY RAINFALL THAT CAN BE EXACERBATED BY CLIMATE CHANGE.

BASED ON THE MOST RECENT REPORT FROM KNMI (THE DUTCH WEATHER FORECASTING COMPANY) ON THE 2023 CLIMATE SCENARIO FOR THE CARIBBEAN.

WE CAN EXPECT HIGHER TEMPERATURES, STRONGER WINDS AND REDUCED RAINFALL. THE WARMER CLIMATE IS LIKELY TO RESULT IN MORE INTENSE TROPICAL STORMS AND HURRICANES WITH STRONGER WINDS,

THIS COULD RESULT IN A POTENTIAL INCREASE IN CATEGORY 5 AND 6 HURRICANES

TOURISM AND LOCAL PARTNERSHIPS

ARUBA IS A POPULAR TOURIST DESTINATION KNOWN FOR ITS NATURAL BEACHES AND HIGH QUALITY.

INVESTING IN A VERTICAL FARM CAN CREATE OPPORTUNITIES FOR PARTNERSHIPS WITH LOCAL BUSINESSES, HOTELS AND RESTAURANTS TO SHOWCASE SUSTAINABLE AND LOCALLY-GROWN PRODUCE.

THIS CAN ATTRACT ECO-CONSCIOUS TOURISTS WHO VALUE SUSTAINABLE FOOD OPTIONS, LEADING TO INCREASED REVENUE AND BRAND RECOGNITION FOR THE INVESTOR

GIVING BACK TO THE COMMUNITY

OUR VERTICAL FARM IS DESIGNED TO HAVE A SOCIAL IMPACT BY ALLOCATING 10 % OF OUR FRESH AND NUTRICIOUS PRODUCE FOR FREE, DISTRIBUTED TO THOSE IN NEED.

THIS PRACTICE HELP COMBAT FOOD INSECURITY, PROVIDING FRESH AND NUTRIENT RICH PRODUCE TO THE LOCAL COMMUNITY, PARTICULARLY THOSE WHO MAY STRUGGLE TO AFFORD IT.

SERVING THE COMMUNITY IS AN INTEGRAL ASPECT OF OUR MISSION AND OUR MORAL OBLIGATION , SO WE STRIVE TO MAKE A POSITIVE DIFFERENCE IN PEOPLE'S LIVES AND HEALTH.

ECONOMIC DIVERSIFICATION OPPORTUNITIES

DEVELOPING A VERTICAL FARMING SECTOR ON ARUBA CAN CREATE ECONOMIC OPPORTUNITIES:

REVENUE GENERATION: EXPORTING SURPLUS AGRICULTURAL YIELD CAN CONTRIBUTE TO THE ISLAND'S ECONOMY, BY CREATING ADDITIONAL INCOME AND CREATING SUSTAINABLE JOBS IN THE AGRICULTURAL AND LOGISTICS SECTORS.

ADDITIONALLY , LOCALLY GROWN PRODUCE CAN BE MARKETED AS A HIGH-QUALITY, SUSTAINABLE, AND FRESH PRODUCT, POTENTIALLY OPENING UP NEW MARKETS AND CONTRIBUTING TO THE ISLAND'S ECONOMY.

POTENTIAL REGIONAL HUB: ARUBA CAN ESTABLISH ITSELF AS A RELIABLE AND COMPETITIVE SUPPLIER OF FRESH PRODUCE TO NEIGHBORING ISLANDS OR EVEN SUPPLY TO CRUISESHIPS.

INCREASED FOOD-PRODUCTION AND -SECURITY

VERTICAL FARMING USES VERTICAL SPACE EFFICIENCY, ALLOWING HIGHER CROP YIELDS IN SMALLER AREAS.

THIS CAN HELP MEET THE INCREASED DEMAND FOR FOOD DURING AND AFTER PANDEMICS, NATURAL DISASTERS OR OTHER CRISES WHEN TRADITIONAL FARMING MAY FACE DISRUPTIONS.

IT ENSURES A MORE SECURE AND STABLE FOOD SUPPLY WITH A HUGE REDUCTION ON WASTE.

EDUCATIONAL, RESEARCH OPPORTUNITIES AND KNOWLEDGE CENTER

01

VERTICAL FARMING PRESENTS A UNIQUE EDUCATIONAL AND RESEARCH OPPORTUNITY FOR ARUBA.

02

BY EMBRACING THIS INNOVATIVE FARMING TECHNIQUE. THE ISLAND CAN FOSTER COLLABORATION BETWEEN ACADEMIC INSTITUTIONS, FARMERS AND TECHNOLOGY PROVIDERS, WORLDWIDE.

03

THIS COLLABORATION CAN LEAD TO KNOWLEDGE SHARING, SKILL DEVELOPMENT AND ADVANCEMENTS IN AGRICULTURAL PRACTICES.

04

THE RESEARCH CONDUCTED IN VERTICAL FARMING CAN ALSO INFLUENCE THE BROADER AGRICULTURAL SECTOR OF ARUBA AND CONTRIBUTE TO SUSTAINABLE FARMING PRACTICES.

some applications

Danish trolley

- Easy to install
- No climate control
- No automation
- Low tech

Container

- 20 or 40 foot
- Turn-key solution
- Medium tech (irrigation, climate control, automation)

Warehouse farm

- < 1000m^2
- Existing building
- Medium tech (irrigation, climate control, automation)

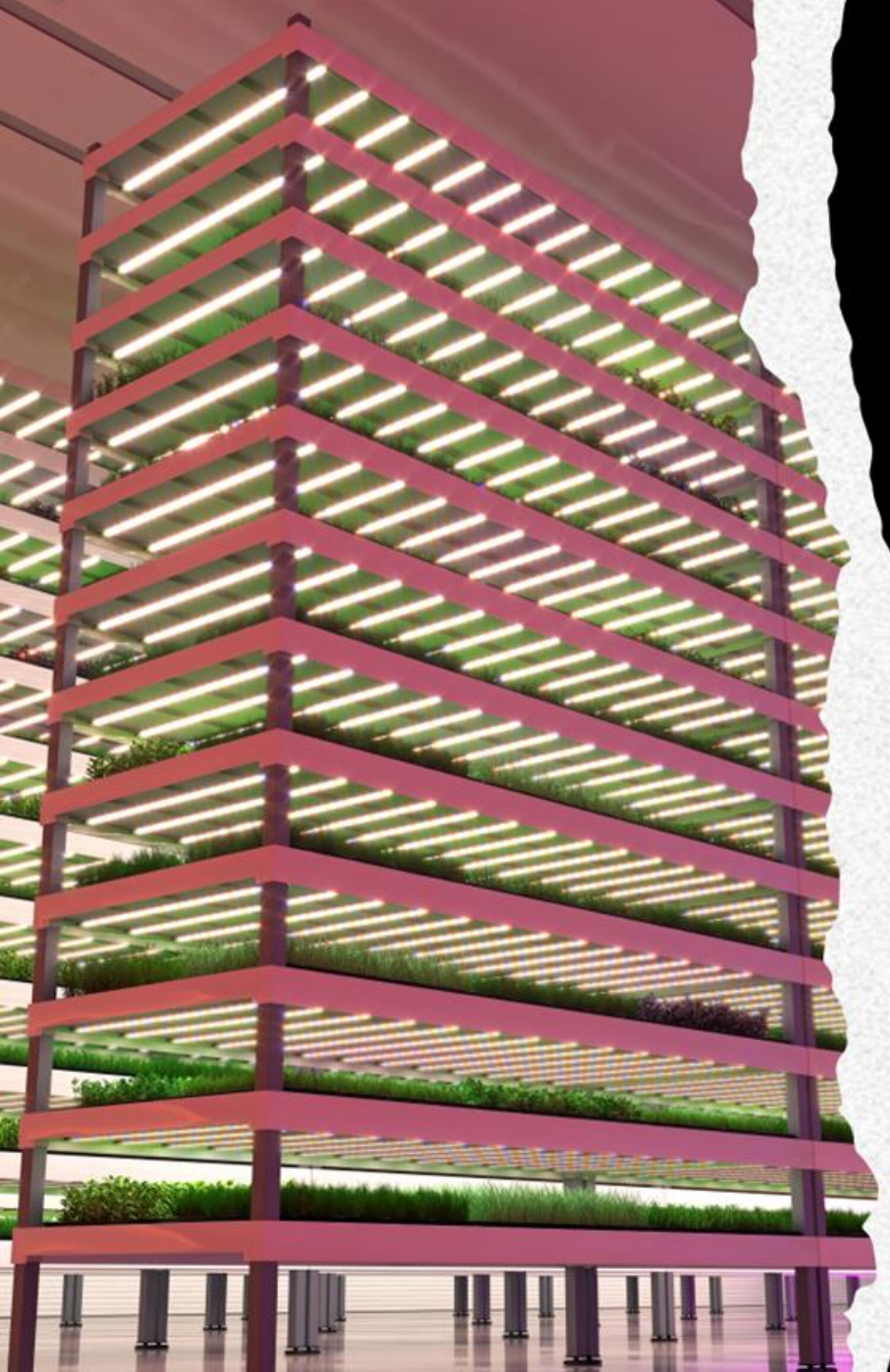
Climate chamber

- 1000m^2-5000m^2 • Existing building • Box in box
- High tech (irrigation, climate control, automation)

Plant factory

- Customized production line • Fully automated • High tech

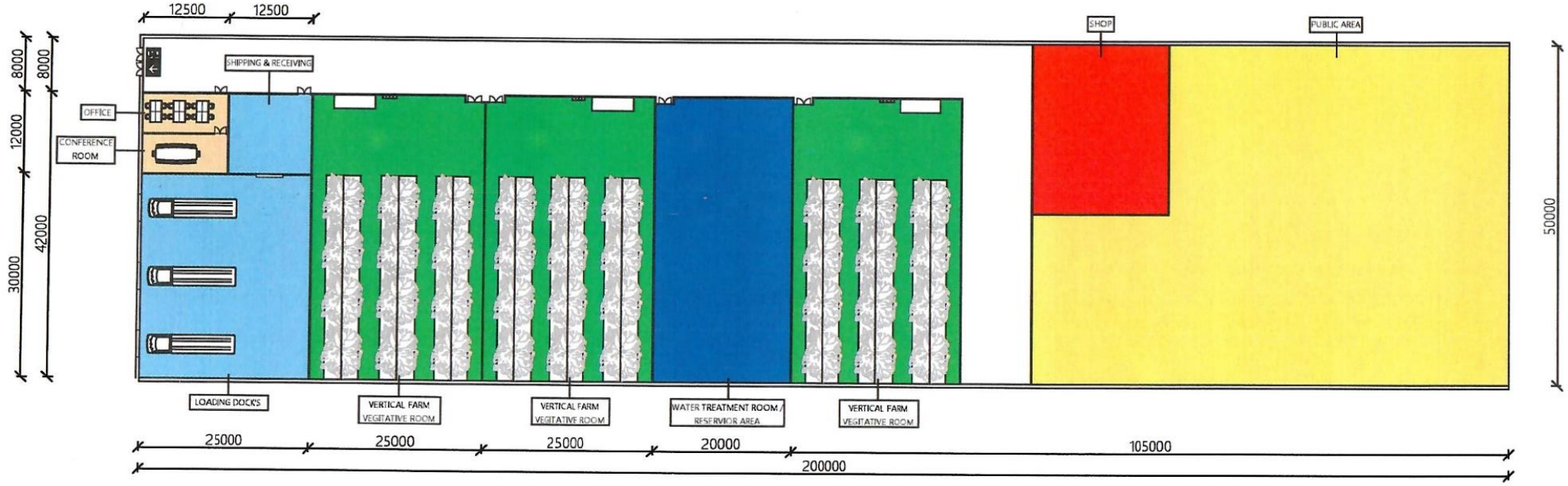
PHILIPS



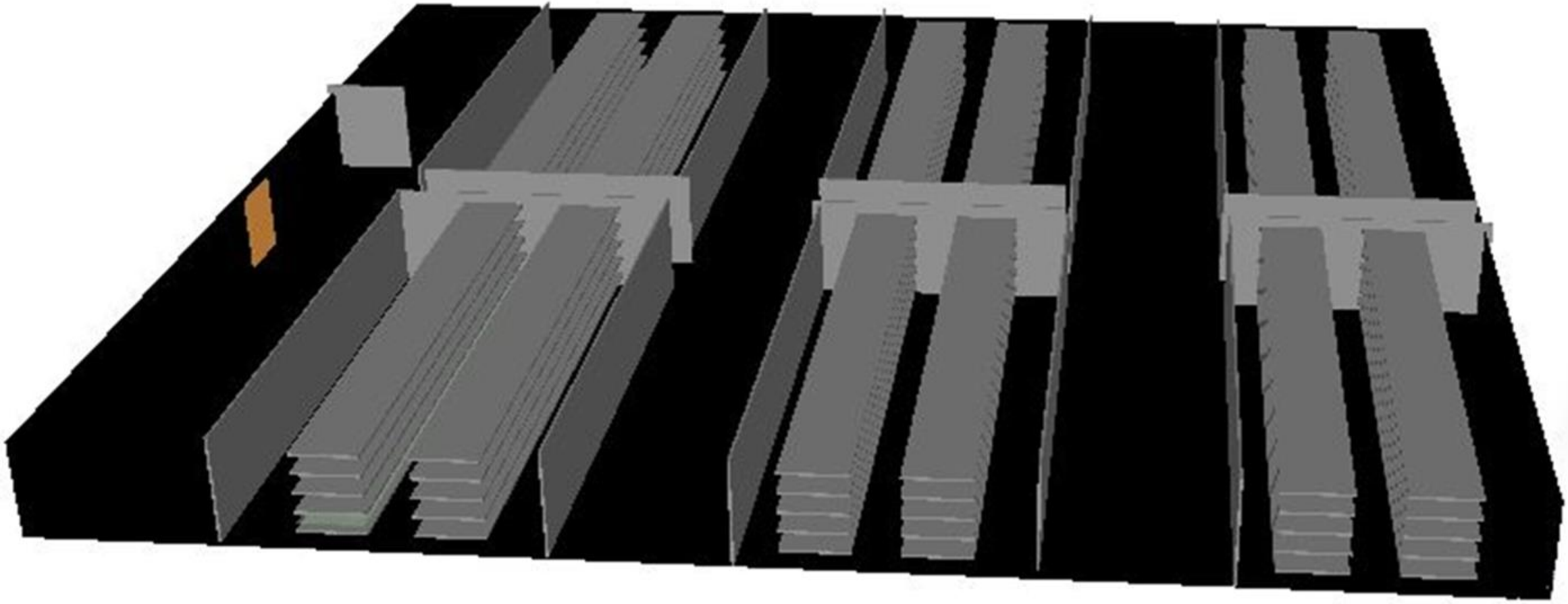
- SIZE : 50 M X 50 M HEIGHT 3,5 M

- 2 PARTS
- 10 RACKS EACH ROW

- 4 LAYERS PER RACK
- 2,4 M X 23 M = 55,2 M2 PER LAYER
- TOTAL 220,8 M2 PER RACK
- TOTAL 20 RACKS
- 4.416 M2 GROW GROUND



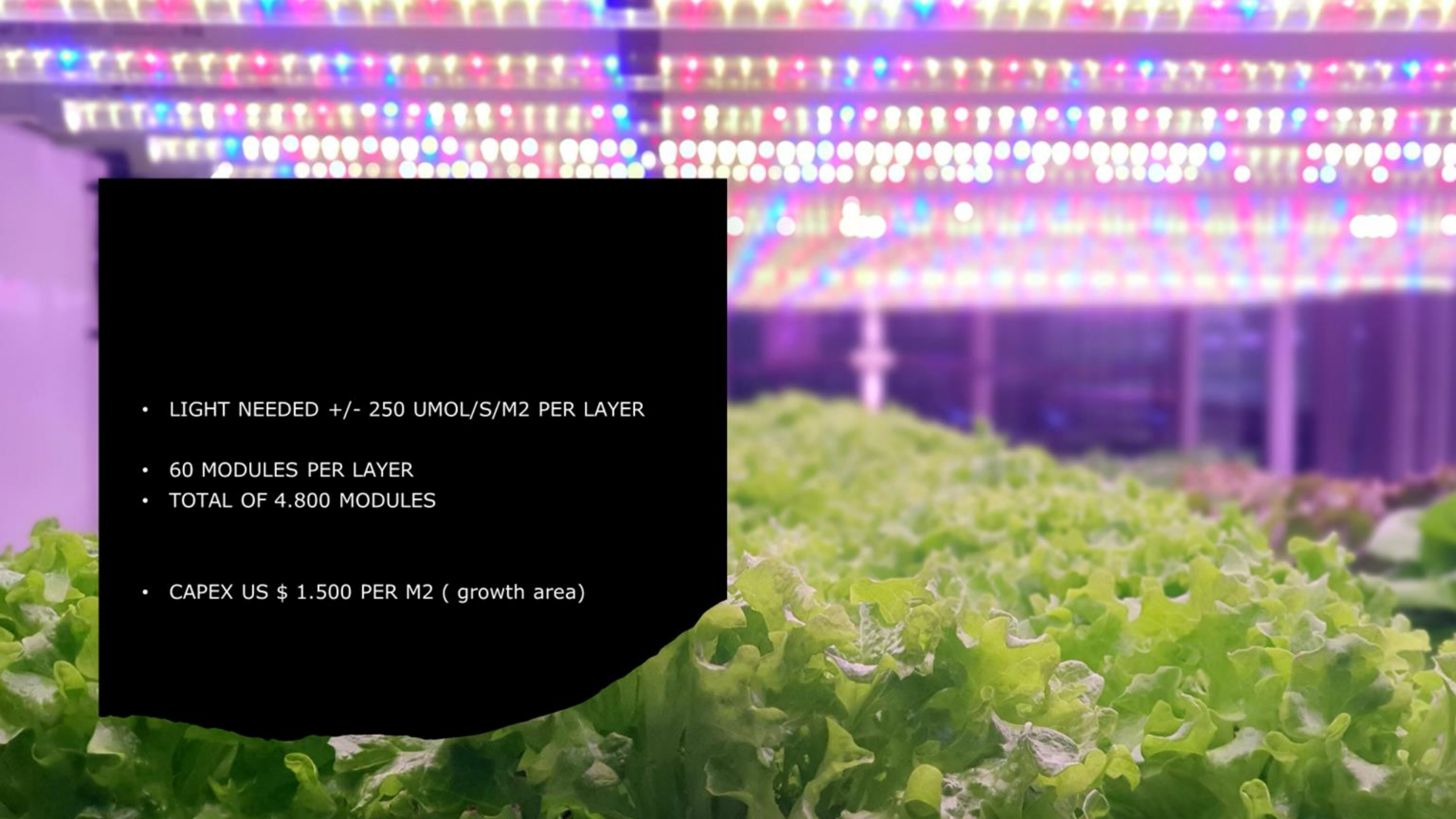
PRESENTATION PL




LETTUCE
LETTUCE
LETTUCE
SPINACH
SPINACH
SPINACH
STRAWBERRY
STRAWBERRY
STRAWBERRY
BASIL
HERBS
CILANTRO
MICRO GREENS
MICRO GREENS
SALANOVA
SALANOVA
ASIAN GREENS
TOMATOES
TOMATOES
CUCUMBER

Philips City Farming

PHILIPS



- LIGHT NEEDED +/- 250 UMOL/S/M2 PER LAYER

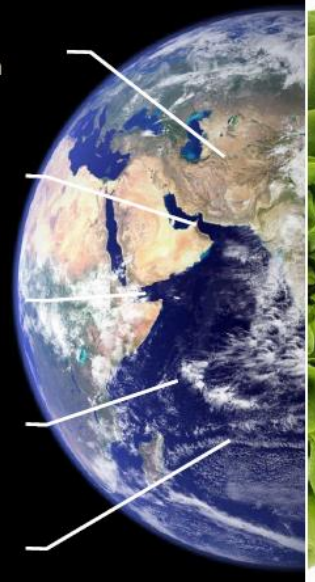
- 60 MODULES PER LAYER
- TOTAL OF 4.800 MODULES

- CAPEX US $ 1.500 PER M2 (growth area)


100 % SELF-SUFFICIENT, SUSTAINABLE, GREEN AND PROTECTED

90 %
reduction in water use

Global challenges



- Growing Population
- Urbanization
- Availability of Water
- Food safety
- Food accessibility

City Farming solutions

- Extremely efficient farming, high yield
- Efficient use of space
- >90% reduction in water use
- No Pesticides, No Pollution
- Grown Locally

“By growing crops vertically, we are able to achieve a higher yield, with a smaller footprint, **with little impact on the environment.**”

Robert Colangelo,
Founding Farmer/President, Green Sense Farms

Benefits for Retail: improved shelf life

70 %
Reduction In CO2 Emissions

Less food miles
Since production can be done close to where the food is consumed, the produce on the shelf can be more fresh. Transportation from Spain to UK, or from Salinas (CA) to New York can take up to five days!

RESULT ! : a reduction of 70 % of greenhouse gas emissions compared to normal agriculture

Less damage during processing
Since there is no soil used, no pesticides used and grown in a closed environment, so no foreign bodies, the produce doesn't have to be washed. Usually the washing and drying process damages the fragile leaves, this makes the leaves turn pink or brown, which makes the produce look less attractive

PHILIPS

Evolution of vertical farming

TESORO ESCONDIDO

Open ground

- **harvest 1-2 times a year**
- dependent on weather conditions

Greenhouses

- **harvest 2-3 times a year**
- manual greenhouse management

6th generation of greenhouses

- **harvest up to 12 times a year**
- automation of growing processes

Semi-automated vertical farms

- **harvest more than 12 times a year**
- controlled environment
- without pesticides
- local cultivation
- needs 95% less water and land
- consistently high yields

Vertical farms with a wide range of crops

- **variety of cultures**
- use of software

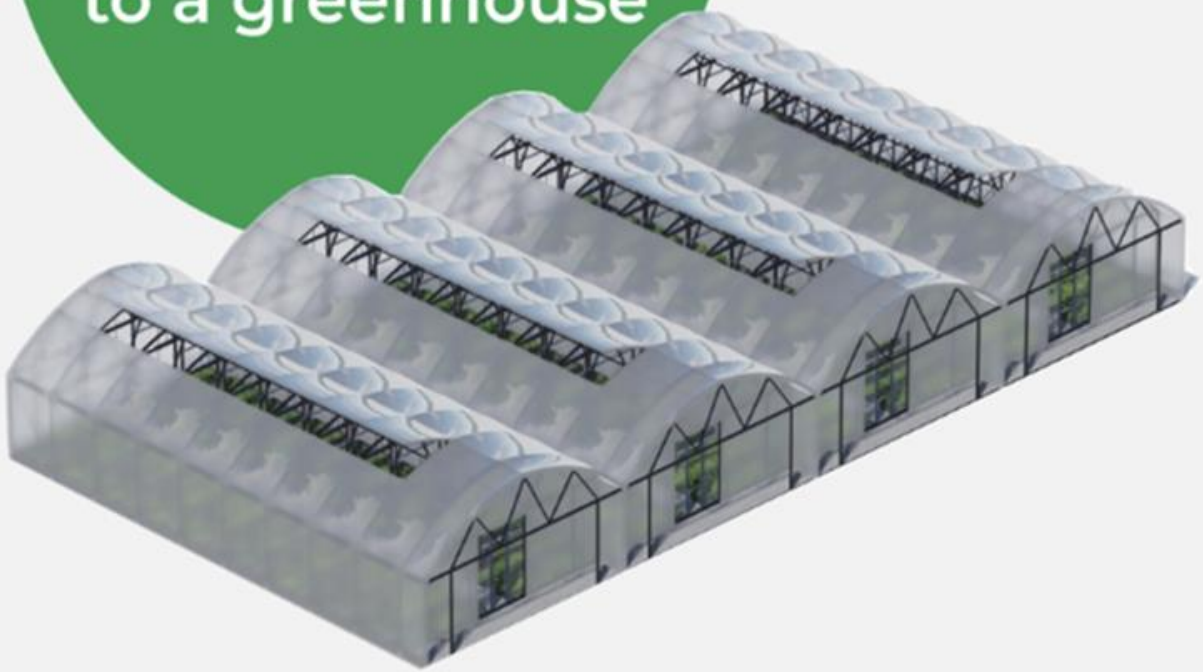
Fully automated vertical farms

- **>90% of the production cycle is automated**
- robots and drones
- platform based on AI/ML

TESORO ESCONDIDO

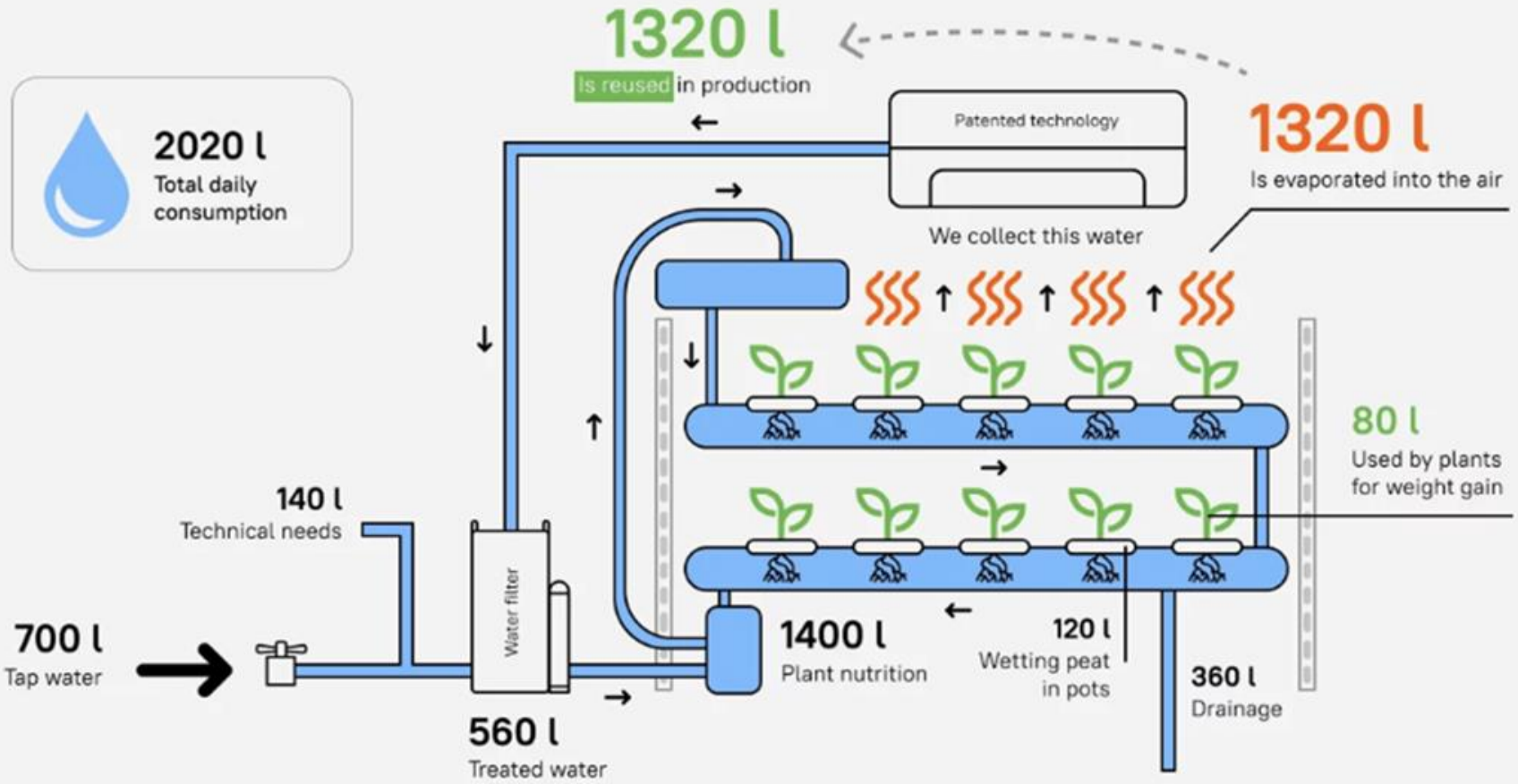
TESORO ESCONDIDO

Vertical farm requires 95% less land compared to a greenhouse



Water cycle

At a 1000 m² vertical farm



OTHER CROPS THEN REGULAR FARMING

- LIKE STRAWBERRIES
- IN 2 MONTHS FROM SEED TO HARVEST
- YEAR-ROUND
- PERFECT SWEETNESS
- UNIQUE LIGHT RECIPE
- INCREASE OF 20 % SUGAR CONTENT (BRIX VALUES)

OTHER CROPS THEN REGULAR FARMING

- LIKE MICRO GREENS & CRESSES
- YEAR-ROUND
- 5 STAR PRESENTATIONS

OTHER CROPS THEN REGULAR FARMING

- LIKE OYSTER MUSHROOMS & OTHER EATABLE MUSHROOMS
  - YEAR-ROUND
  - PERFECT RECIPE

OTHER FISH THEN REGULAR AQUAPONICS

- LIKE LOBSTER
  - YEAR-ROUND
  - FROM HATCH TO FULL GROWN

OTHER PRODUCTS THEN REGULAR PRODUCE

- LIKE ROSES
  - YEAR-ROUND
  - TOP A1 QUALITY

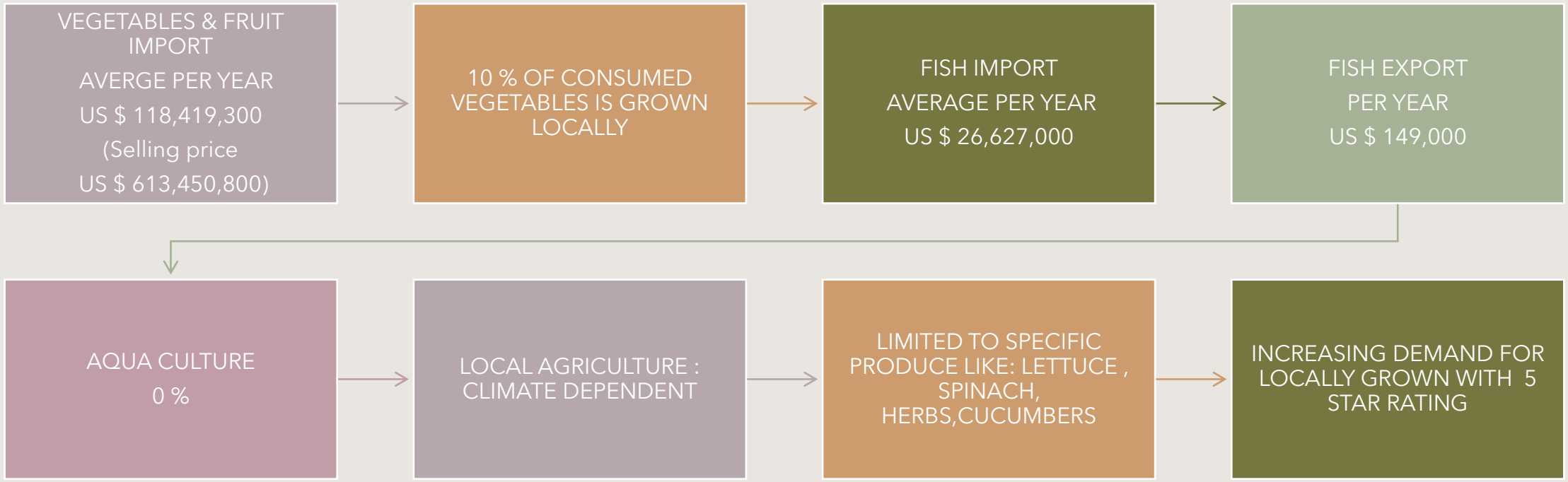
IN WHAT WAY DO WE CONTRIBUTE TO ARUBA ?

- STATE OF THE ART VERTICAL FARM OF 10.000 M2 – 30.000 M2, WITH NO START UP COST FOR FARMERS
- FOOD SECURITY YEAR-ROUND
- GIVING 10 % OF FRESH PRODUCE, FOR FREE TO THE COMMUNITY, FOR THOSE IN NEED
- EMPLOYMENT : PROJECTBASE AND FTE'S WITH VARIED EDUCATIONAL BACKGROUNDS
- KNOWLEDGE CENTER TAILORED TO DIVERSE EDUCATIONAL LEVELS
- ECONOMIC PILLAR
- FOOD-SELF SUFFICIENCY FOR RESILIENCE IN DISASTERS, PANDEMICS OR CLIMATE CHANGE
- NICHE TOURISM INCREASEMENT FOR M.I.C.E. GROUPS OR INDIVIDUALS
- THE CARIBBEAN'S INAUGURAL DESTINATION, DESIGNED TO DELIGHT FOOD CONNOISEURS
- EXTRA TAXES INCOME
- AN ASSORTMENT OF LOCALLY GROWN PRODUCE, INCL. STRAWBERRIES, ROSES, OYSTER-MUSHROOMS, FISH, LOBSTER AND AN ARRAY OF OTHER DELIGHTS.

WHAT ARE THE BENEFITS ARUBA PROVIDES ?

- FULL COMMITMENT TO PROJECT
- POSSIBILITY TO PARTICIPATE IN PROJECT
- LAND AVAILABLE FOR PROJECT
- BUILDING PERMITS FOR PROJECT
- TAX EXEMPTIONS
- DIRECTORS PERMIT OWNERS
- BUSINESS PERMIT

ARUBA ACTUAL NUMBERS:



IMPACT INVESTMENT NUMBERS

TOTAL VERTICAL FARM

PROJECT COST :	US $	5,650,000
PRE INVESTED :	US $	350,000