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DESIRABLE FUTURE IN A

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FReSH

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FOOD ECONOMY

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[www.marcbuckley.earth](http://www.marcbuckley.earth)

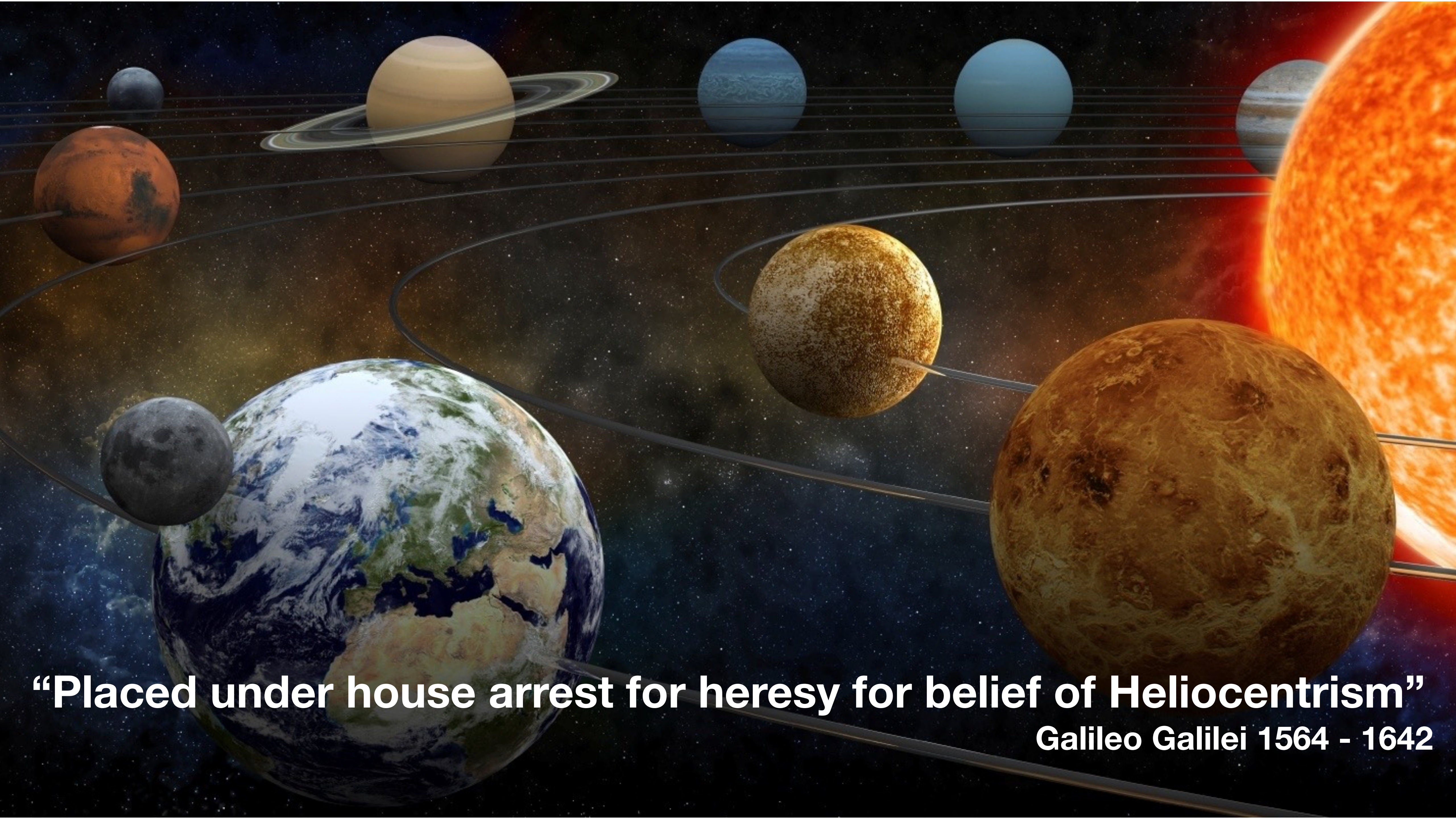
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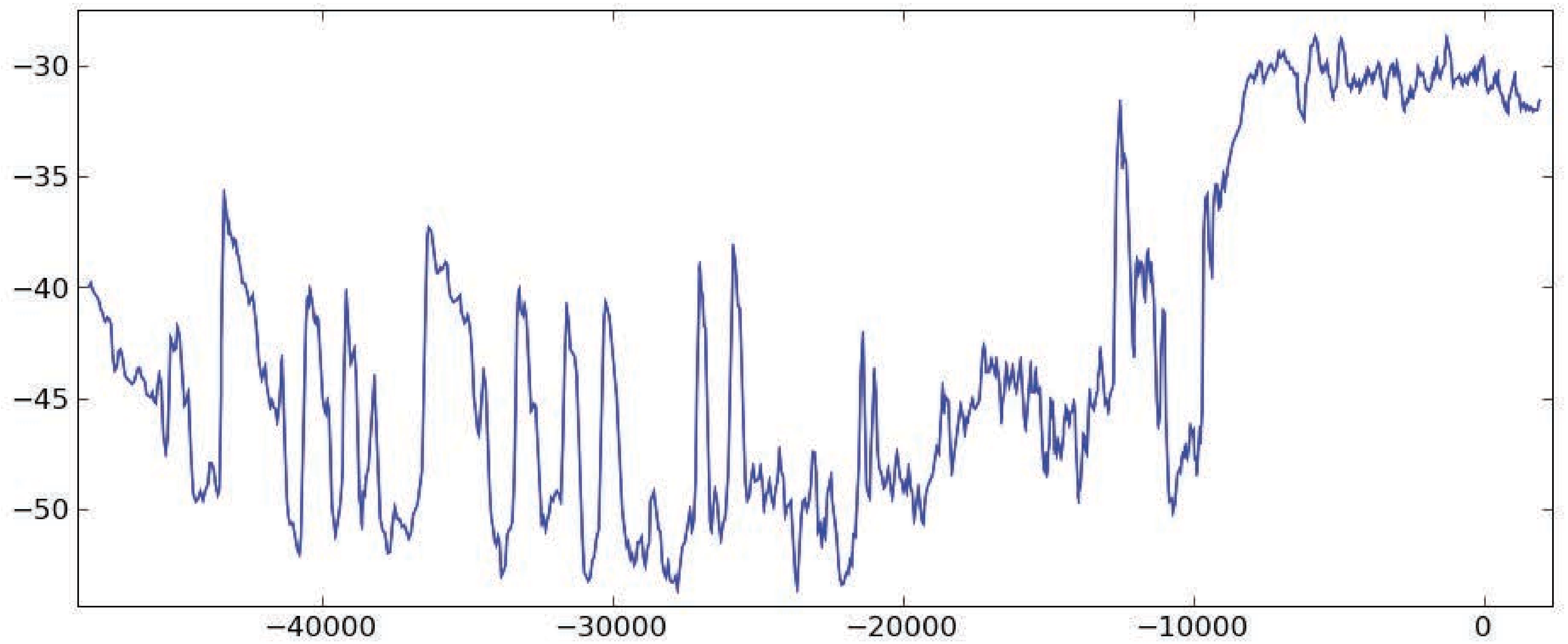
# THE TOWERS



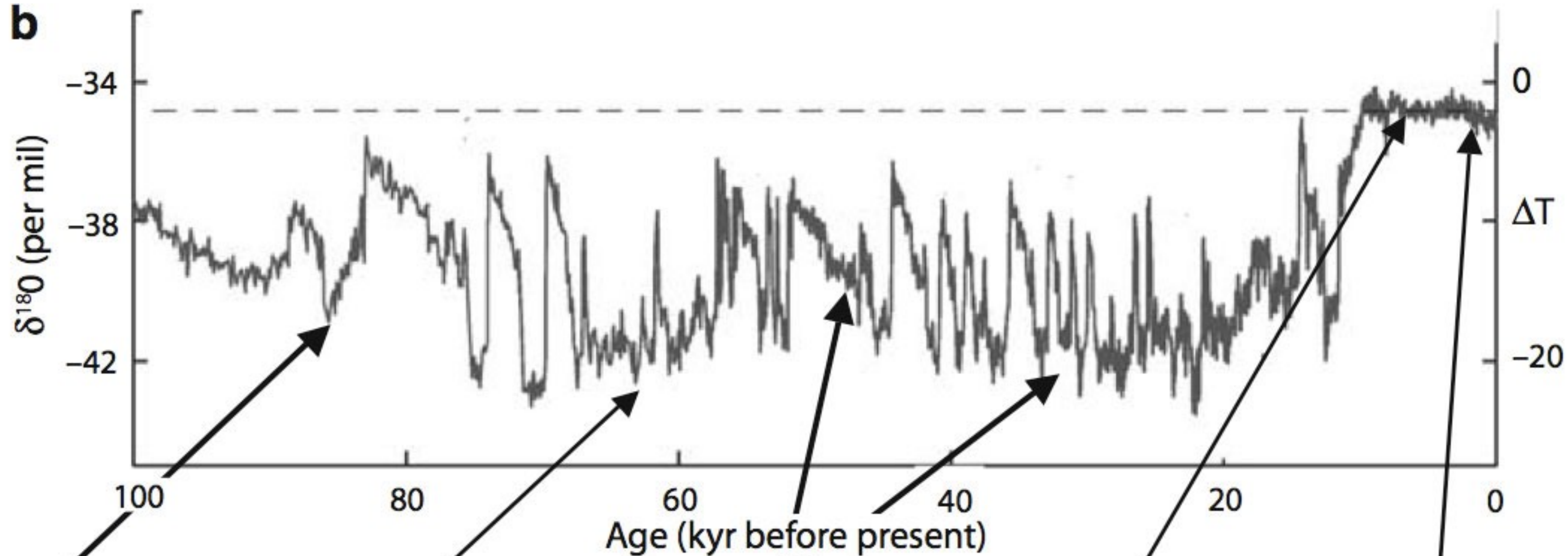


**“Placed under house arrest for heresy for belief of Heliocentrism”**  
**Galileo Galilei 1564 - 1642**







**b**

First migration of  
fully modern  
humans out of Africa

Aborigines  
arrive in  
Australia

Migrations of  
fully modern humans  
from South Asia  
to Europe

Beginning  
of agriculture

Great European  
civilisations:  
Greek, Roman

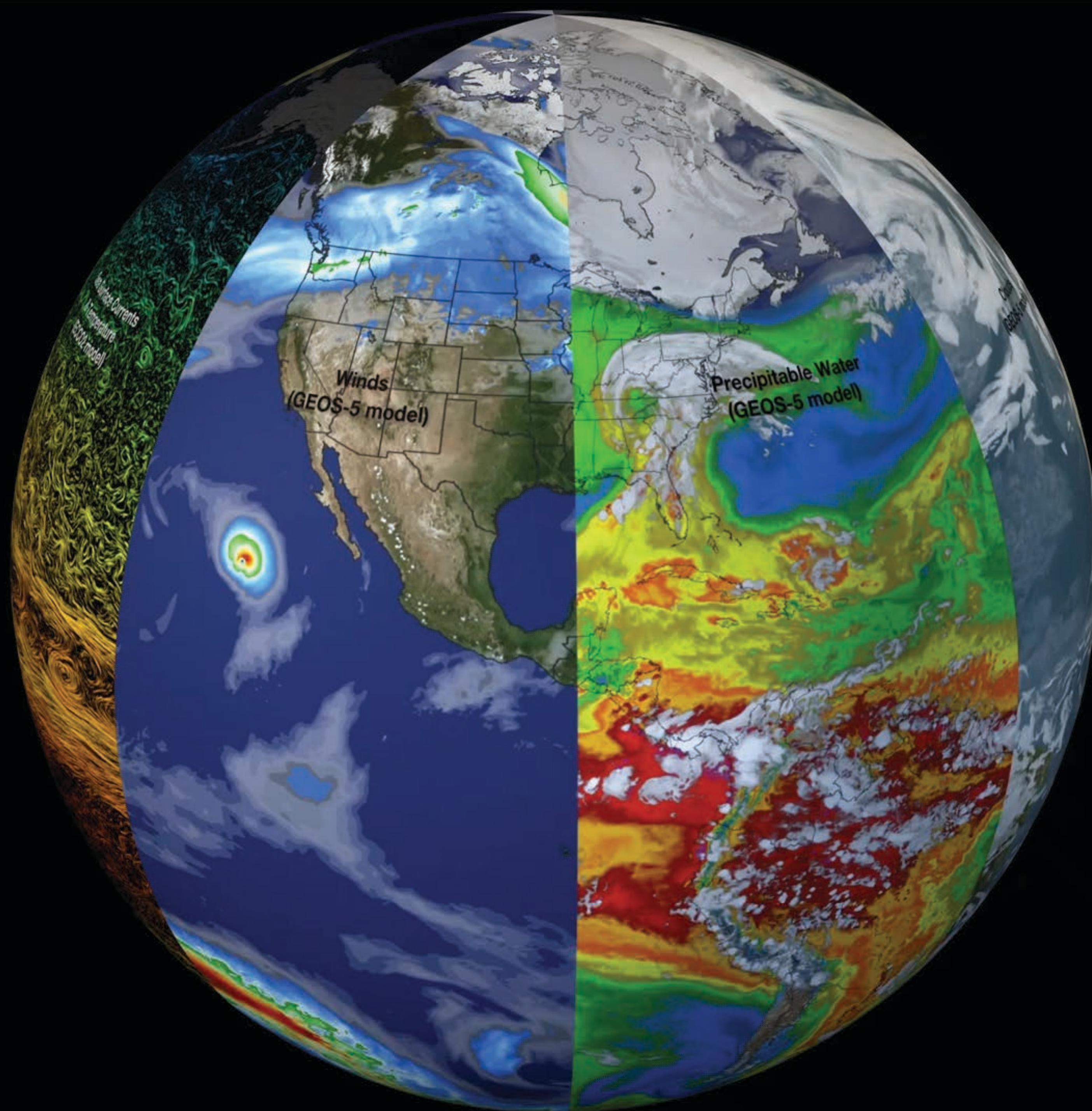














# Agriculture

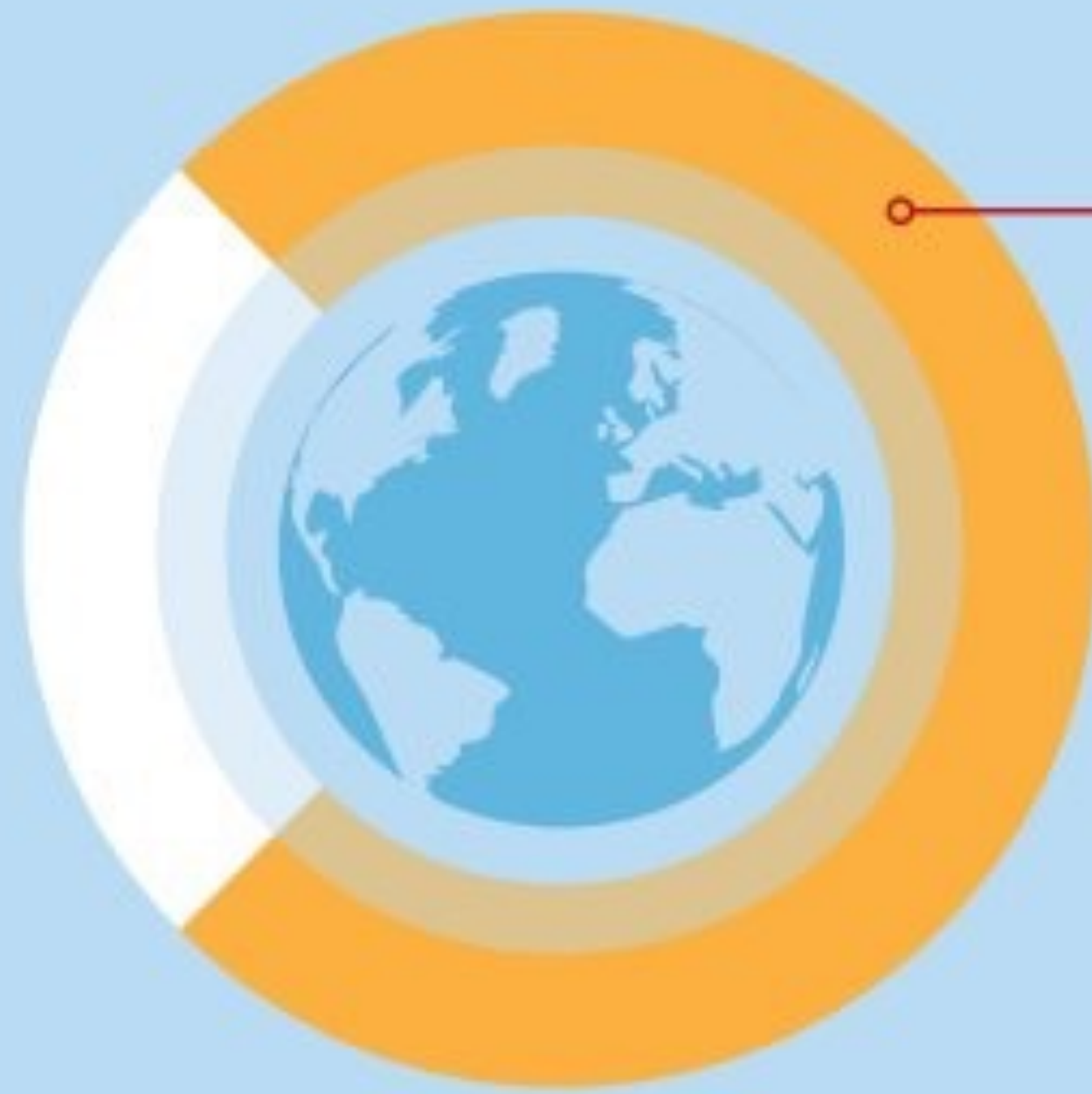
is the World's oldest  
Economy!

12,000 years old

"Agrarian Society"



# Adapting to climate change means ensuring food security



**75%** of the world's food  
is generated from only **12  
plants and 5 animal  
species** making the  
global food system **highly  
vulnerable**





# Resource based Economy on a Planet of Finite Resources

## Footprint 2013 numbers released in 2017

1.70 Global Hectare per person is replicable

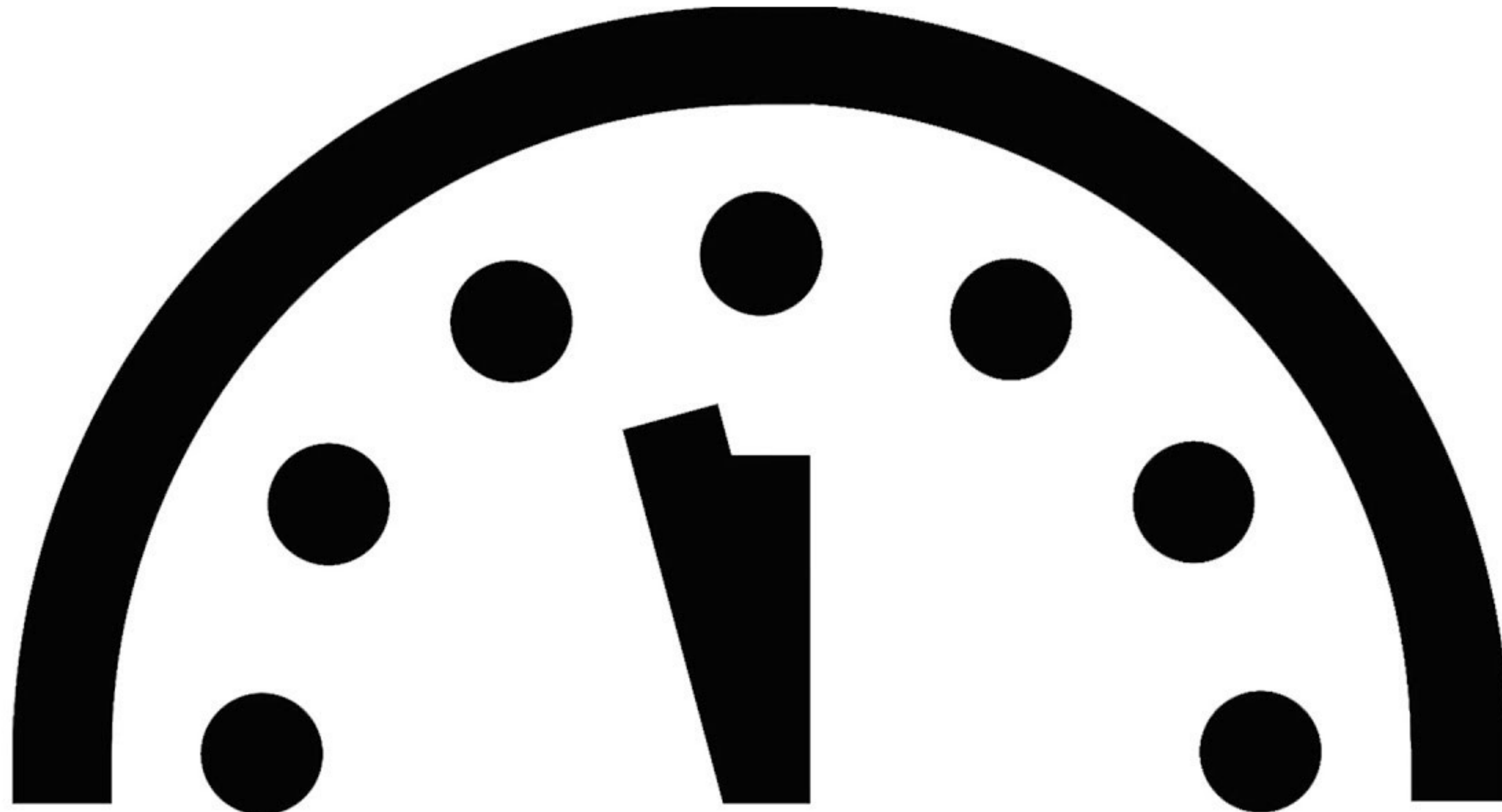
2.87 Average Global Hectares per person.

That is a **Resource Overshoot** and deficit of **1.17 Global Hectare per person**

23 Hectares of land is lost every minute to contaminated soil, Drought, and Flood.



**DOOMSDAY CLOCK**  
**Bulletin of the Atomic Scientists**  
Co-Founded by Einstein

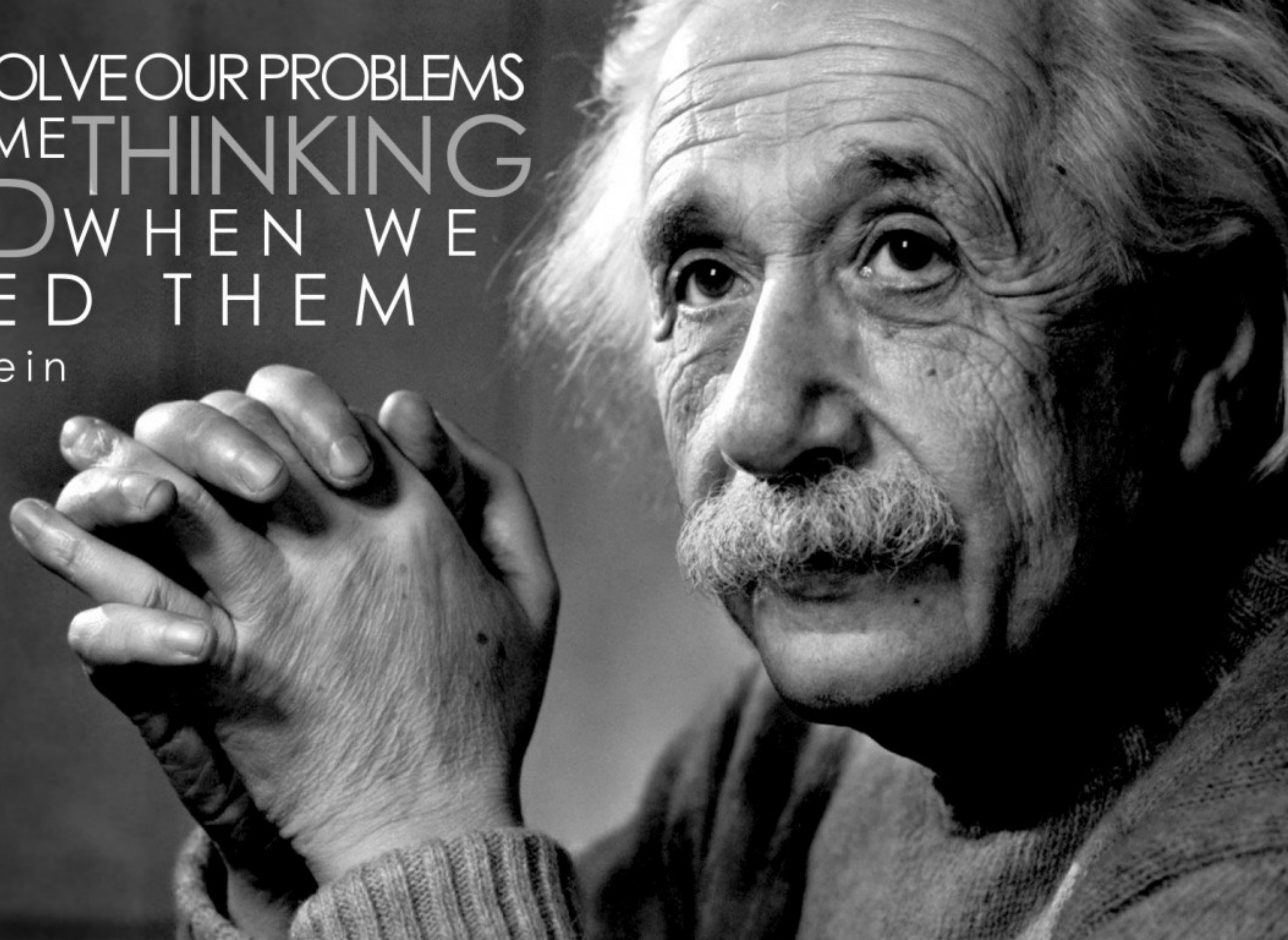


**IT IS 2 MINUTES TO MIDNIGHT**



WE CANNOT SOLVE OUR PROBLEMS  
WITH THE SAME THINKING  
WE USED WHEN WE  
CREATED THEM

- Albert Einstein

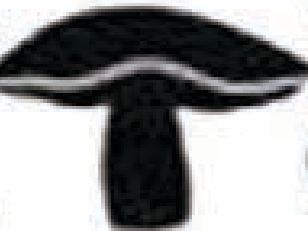
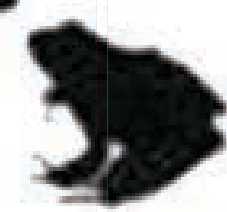
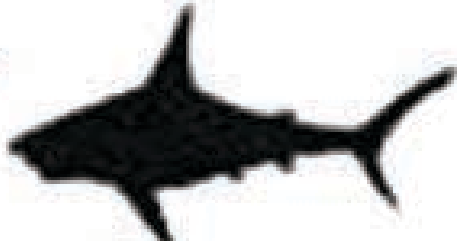
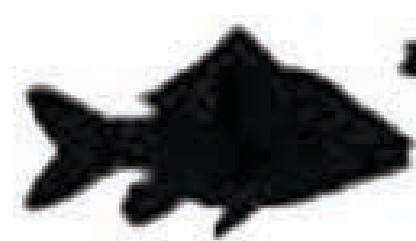
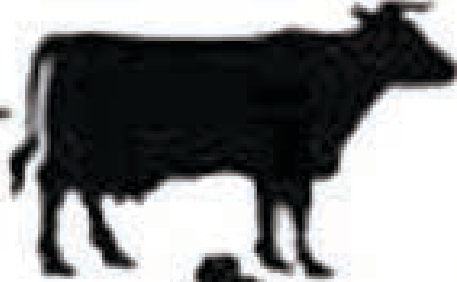
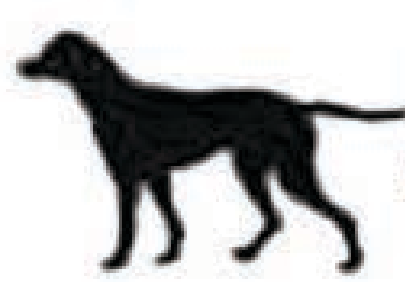
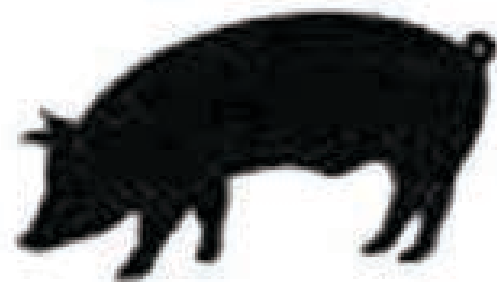
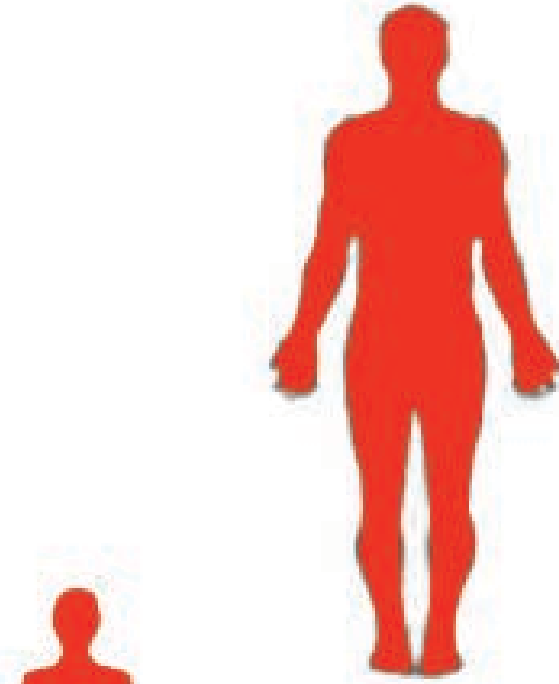




# EGO

MINDSHIFT

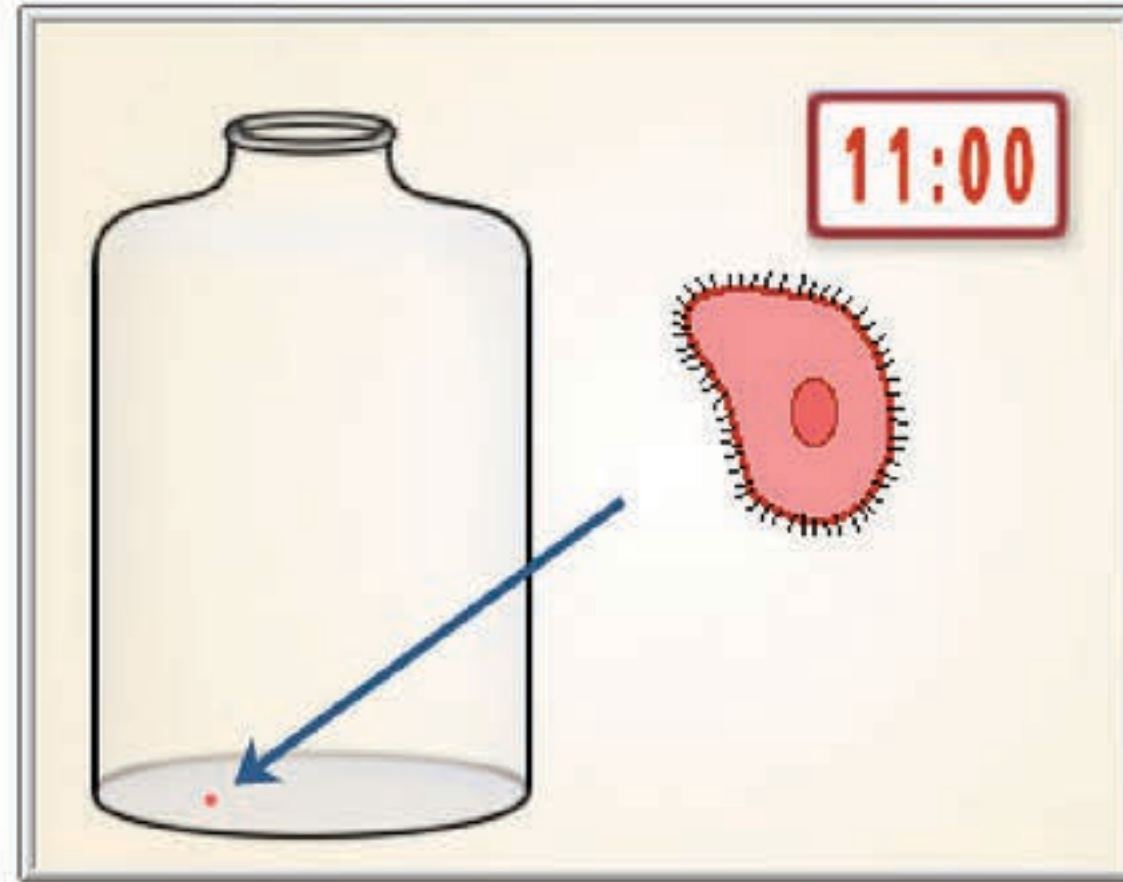
# ECO





# Exponential Bacteria Growth

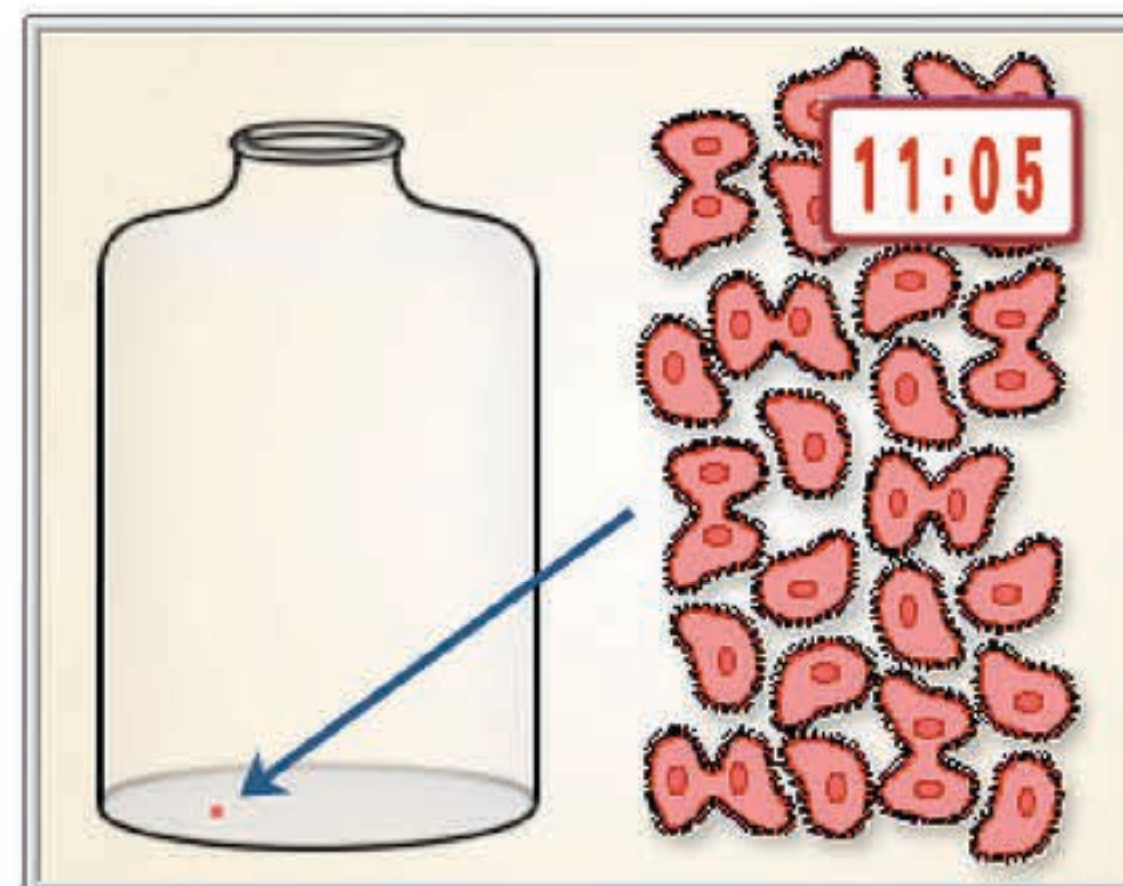
At 11:00, we place a single bacterium in a bottle. It's so small you'd need a microscope to see it!



In one minute it grows to twice its original size and divides in half, reproducing itself, so at 11:01 there are two bacteria in the bottle.



At the end of five minutes, there are 32 bacteria where there used to be just one ... but even all together they're still so small they can't be seen without a microscope.



When do you suppose the bottle was half full?





# EXPONENTIAL

$$y=a*b^t$$

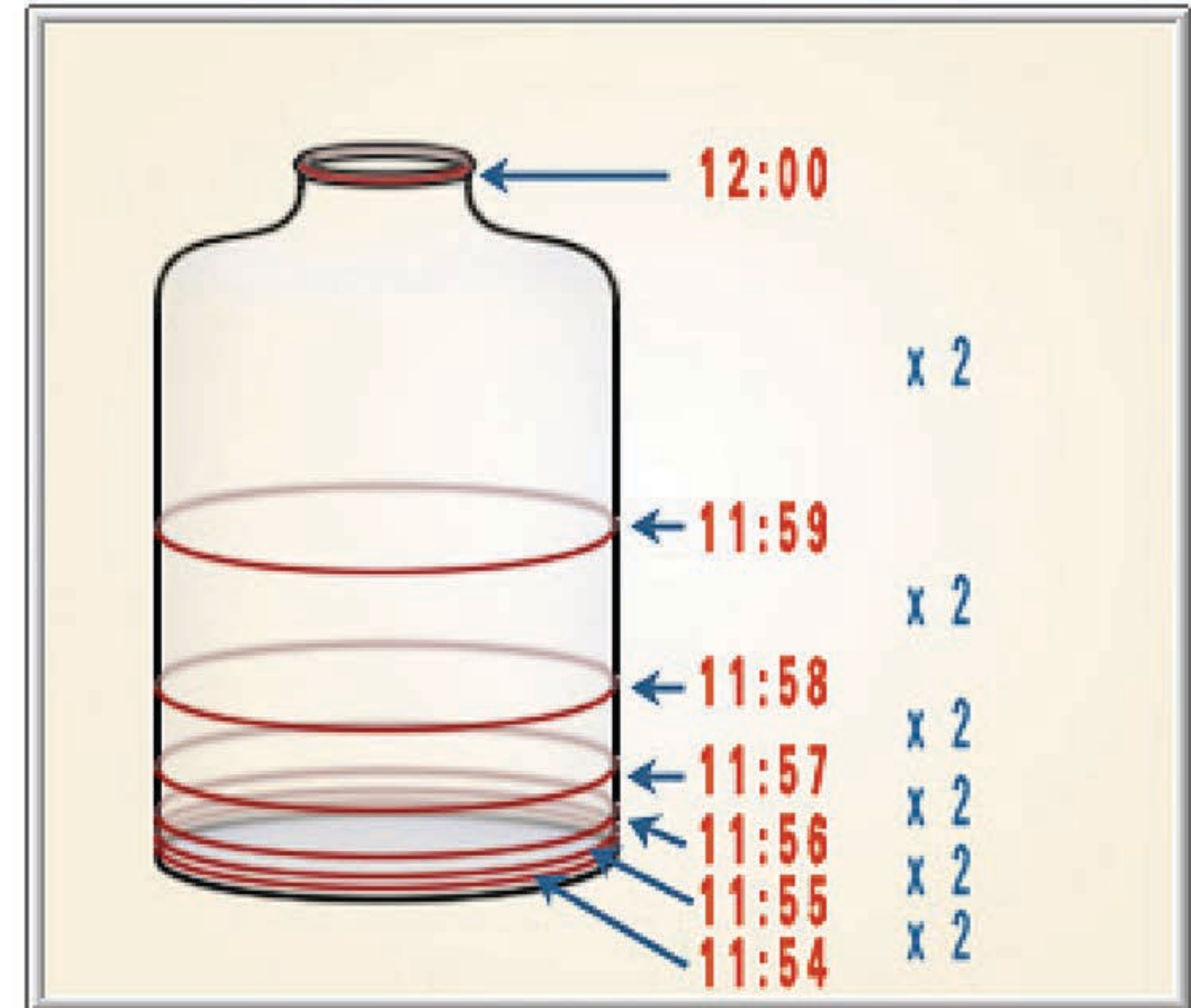


# Exponential Bacteria Growth

**That's right! At 11:59, the bottle is half full!**

**Since the bottle filled up at 12:00, it must have been half full just a minute before.**

**At 11:45 we could just barely see the bacteria, and at 11:30 we still needed a microscope!**





# Exponential Bacteria Growth

Now imagine that just before 12:00, we bring in three more bottles.

If we can help the bacteria to spill over into the other bottles, they'll have four times as much space as they've ever had before!

How much time after 12:00 do you think this will give them?

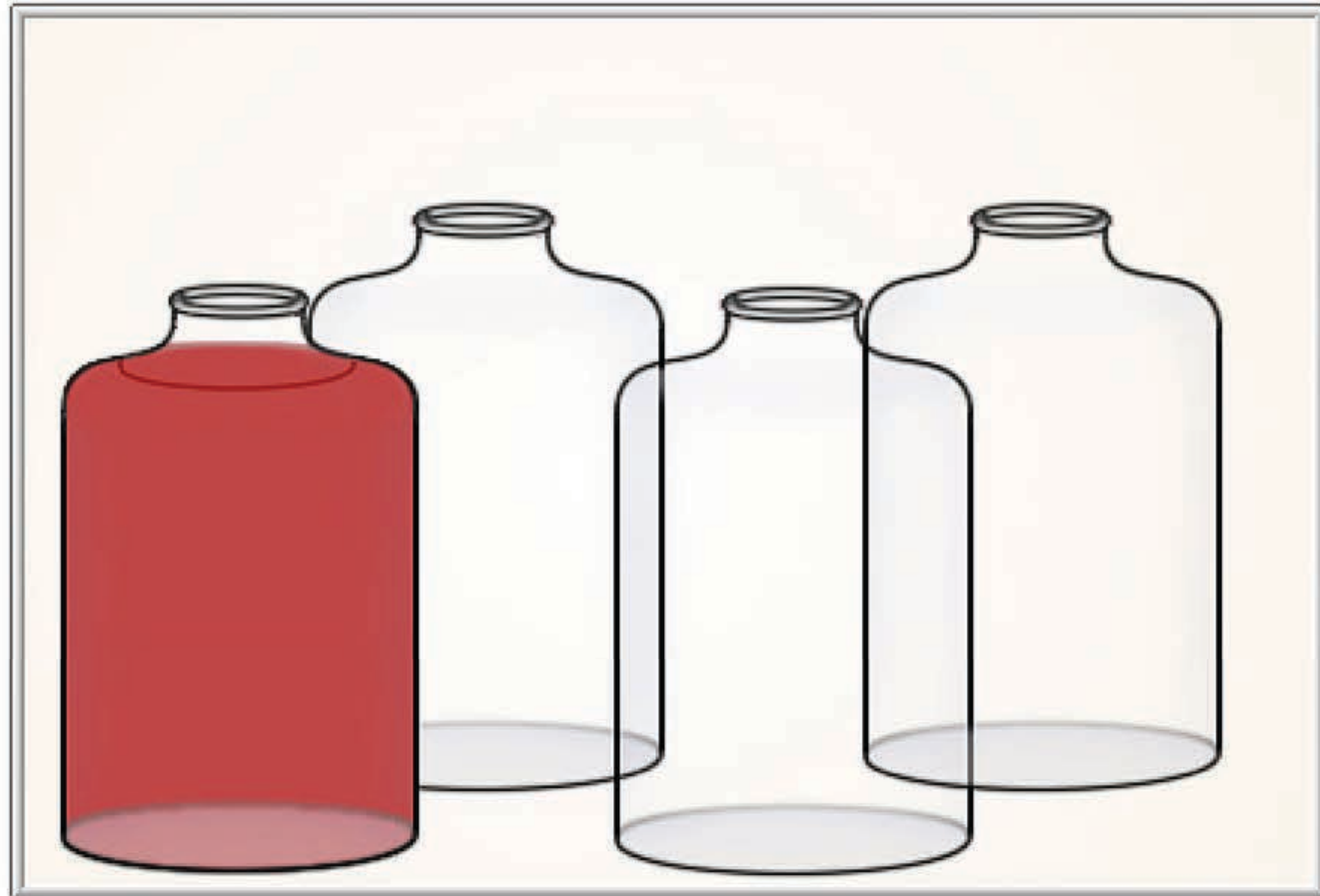
**3 hours?**

**30 minutes?**

**15 minutes?**

**2 minutes?**

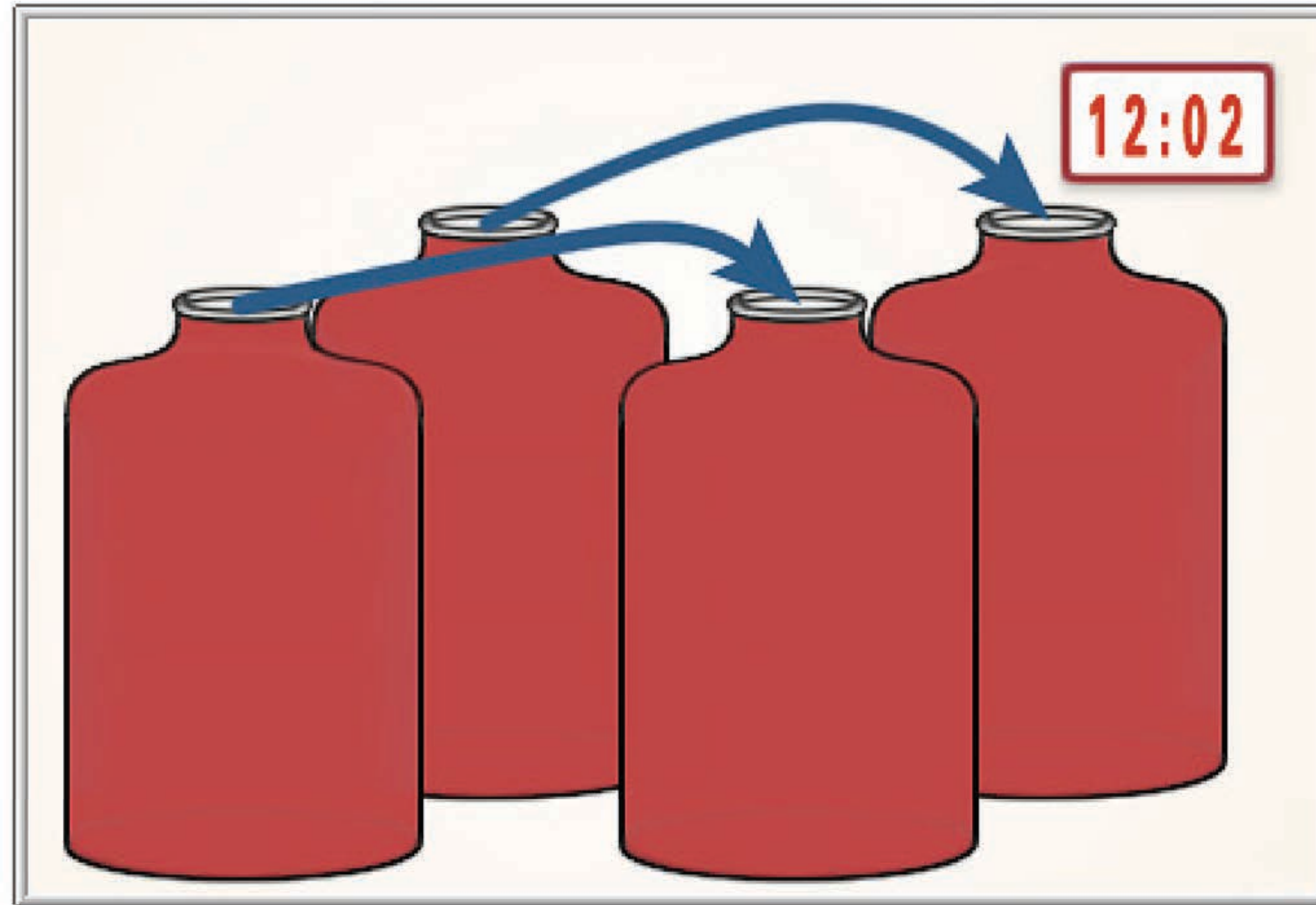
**1 minute?**



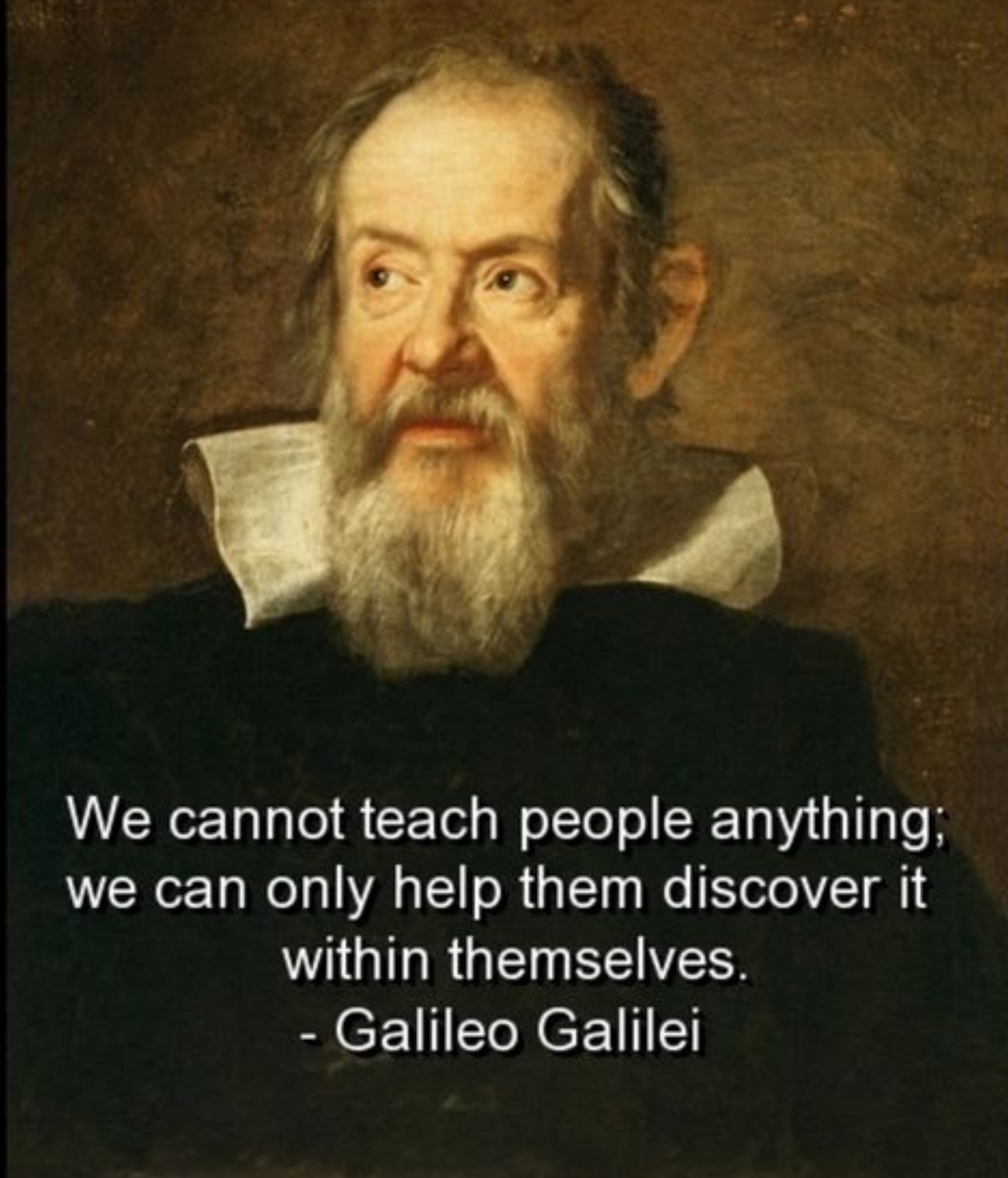


# Exponential Bacteria Growth

At 12:02, all four bottles are full!







We cannot teach people anything;  
we can only help them discover it  
within themselves.  
- Galileo Galilei





# SUSTAINABLE DEVELOPMENT GOALS





Imagine a world where there is **NO POVERTY** and **ZERO HUNGER**.

We have **GOOD HEALTH AND WELL BEING**, **QUALITY EDUCATION**, and full **GENDER EQUALITY** everywhere. There is **CLEAN WATER AND SANITATION** for everyone.

**AFFORDABLE AND CLEAN ENERGY** has helped to create **DECENT WORK AND ECONOMIC GROWTH**.

Our prosperity is fueled by investments in **INDUSTRY, INNOVATION AND INFRASTRUCTURE** and that has helped us to **REDUCE INEQUALITIES**.

We live in **SUSTAINABLE CITIES AND COMMUNITIES** and **RESPONSIBLE CONSUMPTION AND PRODUCTION** is healing our planet. **CLIMATE ACTION** has capped the warming of the planet and we have flourishing **LIFE BELOW WATER** and abundant, diverse **LIFE ON LAND**.

We enjoy **PEACE AND JUSTICE** through **STRONG INSTITUTIONS** and have built long term **PARTNERSHIPS FOR THE GOALS**.

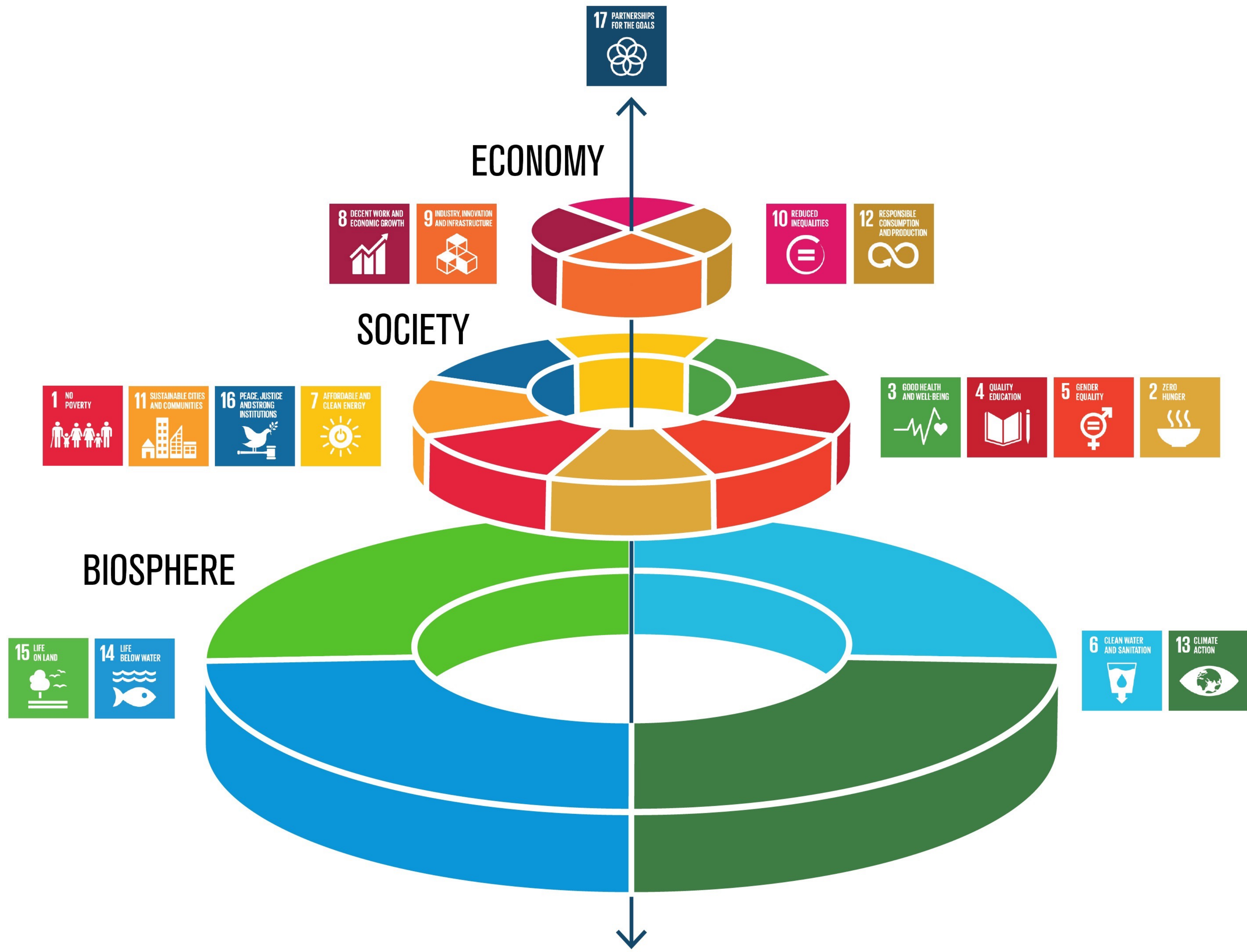




# SUSTAINABLE DEVELOPMENT GOALS

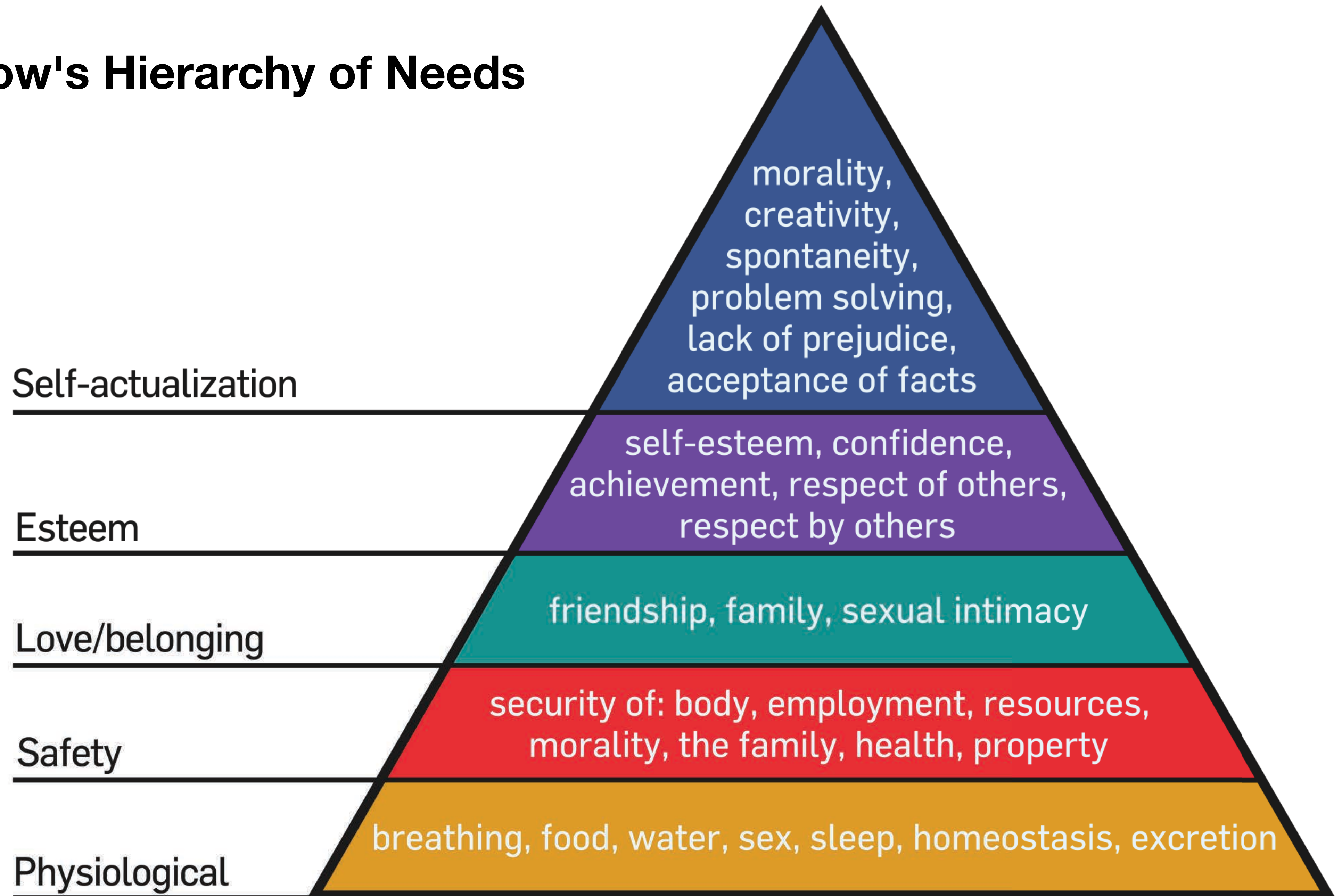
<b>1</b> NO POVERTY 	<b>2</b> ZERO HUNGER 	<b>3</b> GOOD HEALTH AND WELL-BEING 	<b>4</b> QUALITY EDUCATION 	<b>5</b> GENDER EQUALITY 	<b>6</b> CLEAN WATER AND SANITATION 
<b>7</b> AFFORDABLE AND CLEAN ENERGY 	<b>8</b> DECENT WORK AND ECONOMIC GROWTH 	<b>9</b> INDUSTRY, INNOVATION AND INFRASTRUCTURE 	<b>10</b> REDUCED INEQUALITIES 	<b>11</b> SUSTAINABLE CITIES AND COMMUNITIES 	<b>12</b> RESPONSIBLE CONSUMPTION AND PRODUCTION 
<b>13</b> CLIMATE ACTION 	<b>14</b> LIFE BELOW WATER 	<b>15</b> LIFE ON LAND 	<b>16</b> PEACE, JUSTICE AND STRONG INSTITUTIONS 	<b>17</b> PARTNERSHIPS FOR THE GOALS 	 <b>SUSTAINABLE DEVELOPMENT GOALS</b>







# Maslow's Hierarchy of Needs







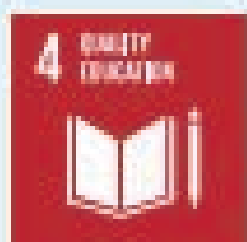
Nearly **80% of the world's poor** live in rural areas and work mainly in agriculture.<sup>2</sup>



There is enough food produced today to feed the global population yet **around 800 million people are chronically undernourished**.<sup>3</sup>



**Malnutrition is the largest contributor to disease in the world**.<sup>4</sup> Over 4 billion people are either micronutrient deficient or overweight.



Malnutrition, which affects nearly one in four children under age 5 worldwide, is associated with **reduced school performance, and impaired brain development**.<sup>5</sup>



Women represent 43% of agricultural labour yet have **unequal access to land, technology, markets and other resources**.<sup>6</sup>



Today, food systems account for **70% of freshwater withdrawals**.<sup>7</sup>



Modern food systems consume around **30% of world's available energy** and are heavily dependent on fossil fuels.<sup>8</sup>



**Agriculture is the single largest employer in the world**, employing around 60% of workers in less developed countries.<sup>9</sup>



Around 900 million people in rural communities, the majority of whom work in agriculture, **don't have access to electricity**.<sup>10</sup>



Seven out of 10 people live in a country that has seen a rise in inequality in the last 30 years.<sup>11</sup> **Inequality shapes who has access to healthy food**.<sup>12</sup>



By 2030, **nearly 60% of the world's population** will live in urban areas, changing the shape of consumer demand and increasing pressure on land and other resources.<sup>13</sup>



**Nearly one third of global food production** – 1.3 billion tons of food – is lost or wasted.<sup>14</sup>



Food systems are currently **responsible for 20-30% of global greenhouse emissions**. Inversely, climate change threatens to cut crop yields by over 25%.<sup>15</sup>



Fish accounts for 17 percent of the global population's intake of animal proteins. However, **over 30% of the world's fish stocks are overexploited**.<sup>16</sup>



**Agriculture is the most significant driver of deforestation**, contributing to a record global tree cover loss of 30 million hectares in 2016, an increase of 51% from 2015.<sup>17</sup>



Increased food insecurity – 815 million undernourished people, up from 777 million in 2015 – can be **both a cause and consequence of conflict**.<sup>18</sup>



**Partnerships are crucial to transforming food systems**. Unlocking opportunities in food systems could be worth \$2.3 trillion annually for the private sector by 2030.<sup>19</sup>



SDG Investment Goals in order  
to stay below 1.5° is  
90 Trillion USD by 2030

That is 6 Trillion USD per year had we started in 2015

Source 2015 - UN, SDG, G20 (B20), COP, WHO, WEF, and True Cost





United Nations  
Framework Convention on  
Climate Change

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ESPAÑOL

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# UN Climate Change Climate Action

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Paris Agreement

Climate Action

COP23 Bonn

UNFCCC Process and Meetings



**\$90 Trillion Needed by 2030 for  
Sustainable Infrastructure**

REPORT / 11. OCT, 2016

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Oportunidades de prácticas en la @CMNUCC en comunicación interna y externa, entre otros departamentos [bit.ly/1x5kCXu](http://bit.ly/1x5kCXu) ¡Postula!

¡Contribuye a la #AcciónClimática global en la CMNUCC!



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@CMNUCC

Comunicación y Relaciones Públicas  
United Nations Office of Climate Change



ONU Action Climat @CCNUCC

La CCNUCC regrette le retrait des Etats-Unis de l'Accord de Paris, qui demeure un accord historique entre les nations [bit.ly/2qNggWD](http://bit.ly/2qNggWD)



Climate change

# World needs \$90tn infrastructure overhaul to avoid climate disaster, study finds

Report by Global Commission on the Economy and Climate says world needs 'urgent' shift away from carbon-heavy infrastructure over the next 15 years

This article is 8 months old

3,038 152

Oliver Milman in New York

@olliemilman

Thursday 6 October 2016 18.01 BST



A construction site in Bangkok, Thailand. The study found \$90tn is expected to be earmarked for infrastructure worldwide over the next 15 years, requiring an 'urgent' shift to low-carbon, energy-efficient projects. Photograph: Nicolas Asfour/AFP/Getty Images

A gigantic overhaul of the world's buildings, public transport and energy infrastructure costing trillions of dollars is required if dangerous climate change is to be avoided, according to a major new report.

The [study by the Global Commission on the Economy and Climate](#), which is co-chaired by prominent climate economist Lord Nicholas Stern, found that the world is expected to invest about \$90tn in infrastructure over the next 15 years, requiring an "urgent" shift to ensure that this money is spent on low-carbon, energy-efficient projects. Such smart investment over the next two or three years could help ameliorate the climate crisis, but "the window for making the right choices is narrow and closing fast".

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Business

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Jetzt anmelden

Most popular



India v Pakistan: ICC Champions Trophy 2017



**MEETINGS COVERAGE****GENERAL ASSEMBLY > PLENARY****SEVENTY-FIRST SESSION, SUSTAINABLE DEVELOPMENT GOALS EVENT, AM & PM****GA/11905****18 APRIL 2017**

## Speakers in General Assembly Event Urge ‘Dramatic’ Increase in Private Investment, Pooled Resources to Meet \$6 Trillion Annual Cost of Sustainable Development Goals

While a daunting \$90 trillion would be required to tackle sustainable development challenges in the coming years, speakers at today’s General Assembly Action Event warned that the cost of inaction would ultimately be far deeper, with humanity’s very future hanging in the balance.

Executives from various financial firms — including JP Morgan Chase and AVIVA Investors — joined Member States at the Assembly’s “SDG Financing Lab”, discussing ways to align financial markets with the 2030 Agenda for Sustainable Development. Speakers from across those diverse sectors agreed that private investment in development could be scaled up dramatically by reducing risk and educating companies about the bottom-line benefits of sustainability.

However, many delegates also voiced concern that those opportunities could be overshadowed by a rising tide of nationalism and a resurgence of protectionist policies around the globe. Some urged Governments to resist those trends, calling instead for open, inclusive markets to help level the playing field.

Assembly President Peter Thomson (Fiji) said at the outset that estimates put the cost of achieving all 17 Sustainable Development Goals at \$6 trillion annually until 2030. “While these sums may seem enormous, and the complexity of reforms needed to mobilize these funds may seem prohibitive, the fact is that the cost of our inaction will ultimately be far greater,” he said. As the private sector was the custodian of the world’s largest pool of resources, the main challenge was to create the right incentives and enabling environments to help businesses reorient investments towards sustainable development.

United Nations Deputy Secretary-General Amina J. Mohammed agreed that it was in the interest of all countries, companies and people to tap the wealth of good that sustainable development would bring in environmental, economic and social terms. Noting that financial flows and investments were increasingly being aligned with the Goals, she said mobilizing pension funds, the insurance sector and other large pools of capital could produce even greater wins. Sustainability should guide the creation of incentive structures, inform consumer preferences and shape shareholder interests, she said, adding: “The dividends will reverberate far and wide.”

**Search**

Search for documents and statements

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[Advanced Search](#)**Daily Noon Briefing****2 JUNE 2017**

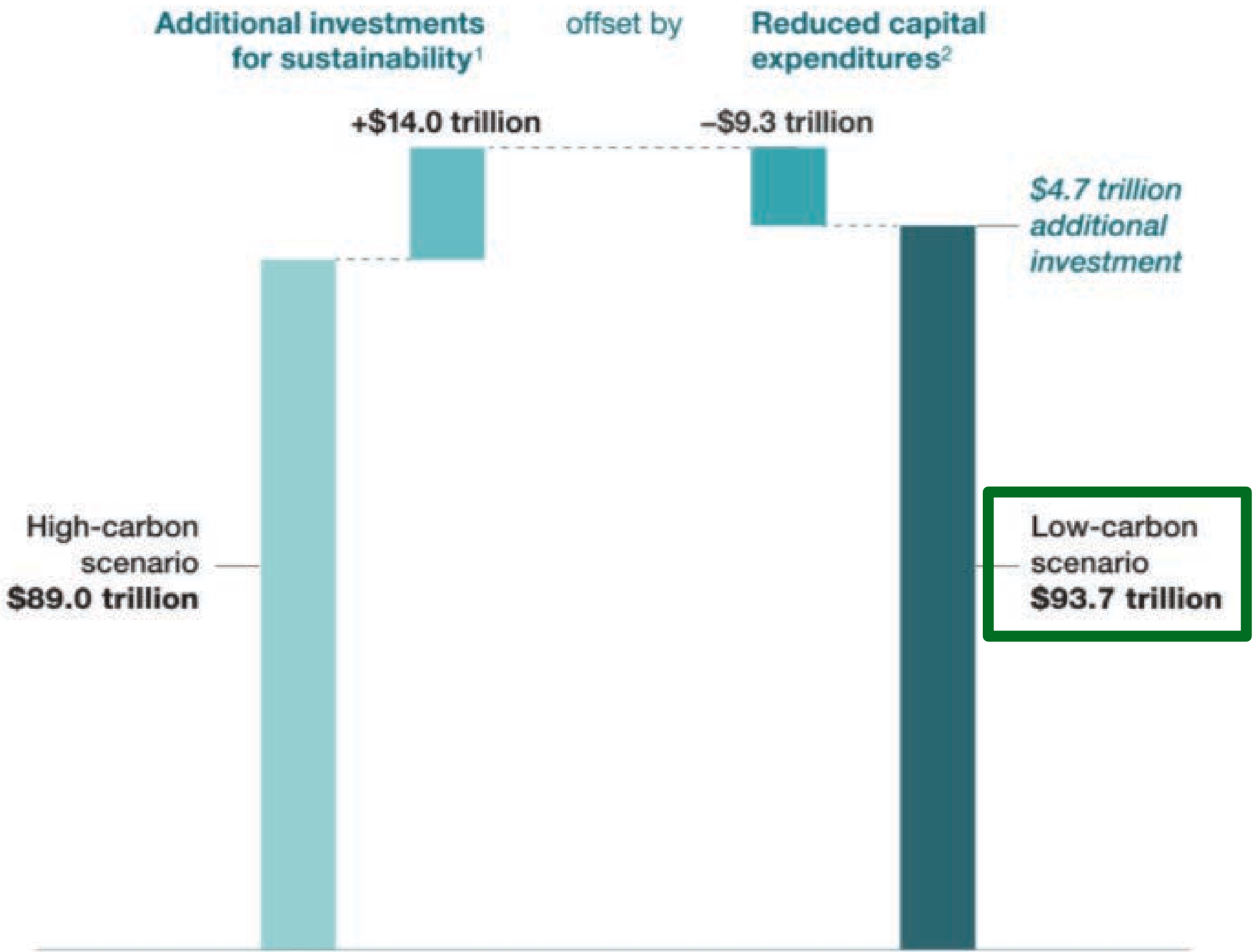
Speaking to reporters in Saint Petersburg, Russia, today, the Secretary-General said that climate change is undeniable, and added that climate action is unstoppable. He urged all the Governments around the world to stay the course and to remain committed to the implementation of the Paris Agreement.

[Latest Noon Briefings >>](#)**Highlights****61st Session of the  
Commission on the Status  
of Women****New York, 13-24 Mar 2017**



Building sustainable infrastructure over the next 15 years will require an additional \$4.7 trillion.

Projected global demand for infrastructure services, 2015–30  
(estimated in constant 2010 dollars)



<sup>1</sup>Projected costs of \$9 trillion in low-carbon power generation and \$5 trillion in energy efficiency.

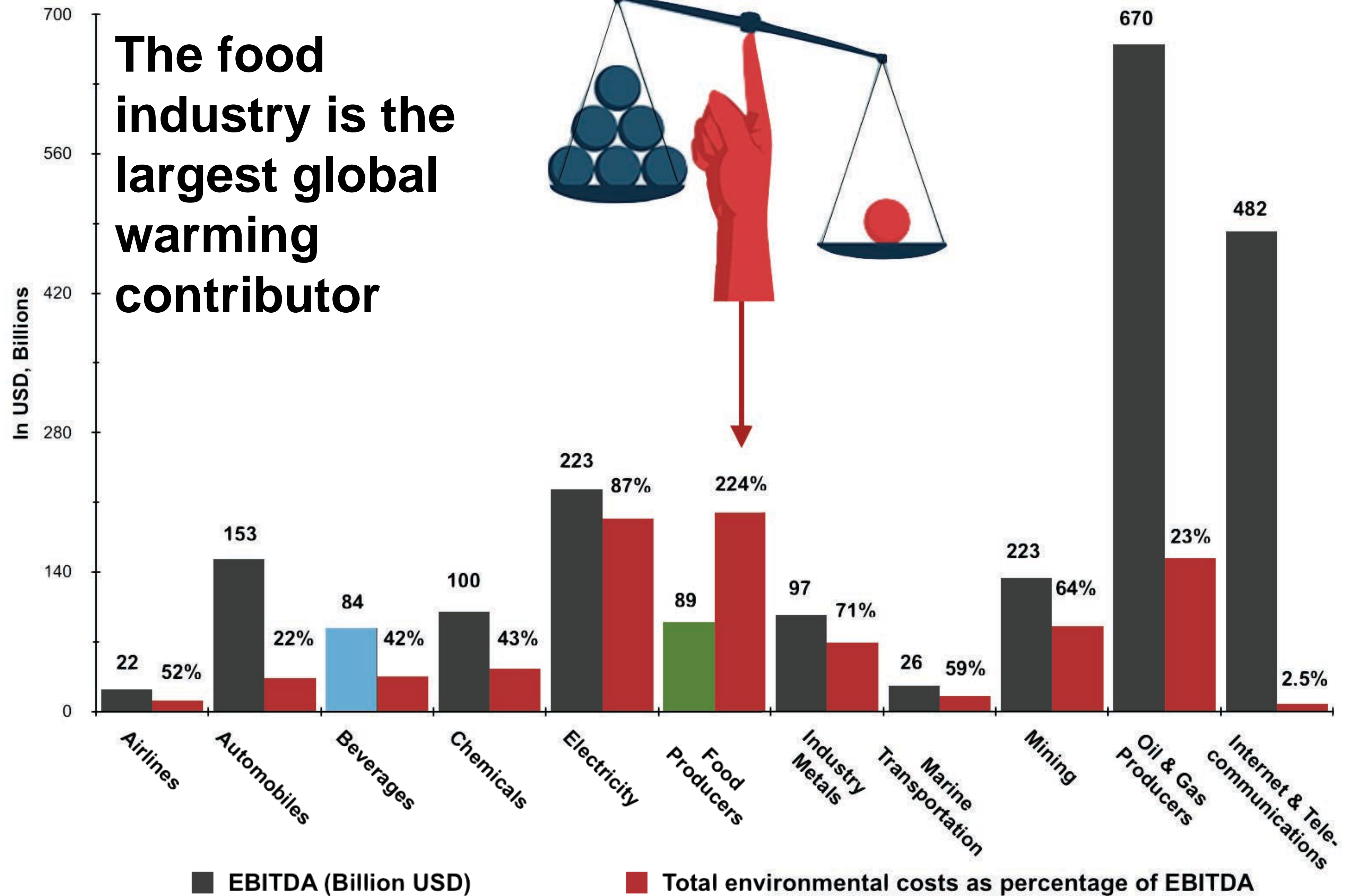
<sup>2</sup>Projected savings of \$6 trillion in reduced fossil-fuel costs, \$3 trillion via more compact urban footprints, and \$0.3 trillion in reduced electricity transmission and distribution.







# The food industry is the largest global warming contributor





# A Reform of the Agriculture, Food and Beverage Industry is crucial for achieving the SDG's





# The Solution: ALOHAS ECO-CENTER



We will revolutionize the Agriculture, Food and Beverage Industry








# Prototype

**The ANJA ALOHAS  
ECO CENTER  
is a pilot initiative**

**In developing  
countries it can be  
scaled to fit  
individual  
infrastructures**



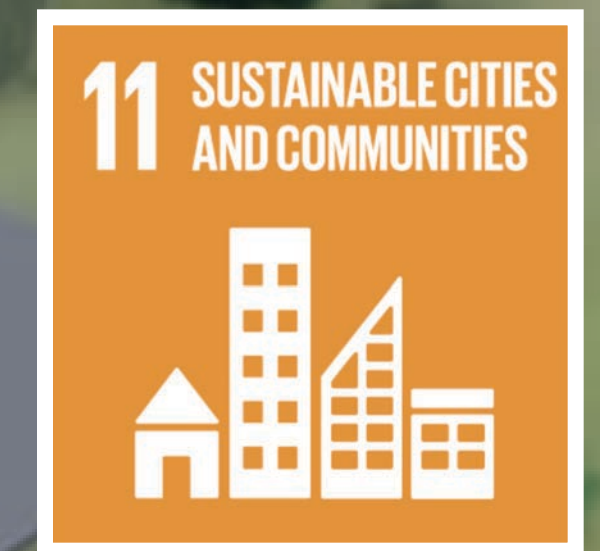
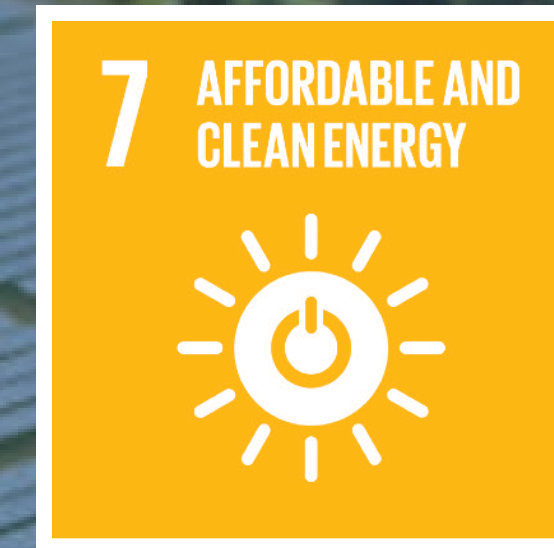




# The Alohás Eco-Center and the SDG's



# ANJA directly addresses 11 SDG's







ANJA's vertical farm will grow  
**1000%** more fresh produce yearly  
than traditional methods





# Exponential Use of harvestable Land



**Massive increase of harvested area (1000 ha vs. 10 ha)**

- **Approx. 30 harvests a year (not 3) regardless of weather**
- **No pesticides**
- **No artificial fertilizers**
- **95% less water consumption**

**=> no negative environmental impact**

**Production includes 12+ different salads, micro greens, broccoli, brussel sprouts and spinach**







ANJA will use state of the art beverage  
production methods and set an example  
with **100%** CleanTech

12 RESPONSIBLE  
CONSUMPTION  
AND PRODUCTION





# Co-packing and Beverage-Filling Role Model for the Industry



	Carlsberg	Coca-Cola	ANJA
CO2 Emissions in Metric tons	61	30	0
Water Consumption in Liters	2,87 Mio	2,05 Mio	0
Energy Consumption in kWh per day	119.179	99.885	0

All Statistics : Day Usage

Quelle:  
Geschäftsberichte und eigene Berechnungen (Basis: 3 Mio Hektoliter p.a.), 2016



**ANJA will use 100% rain and ambient water  
and will not deplete groundwater resources**





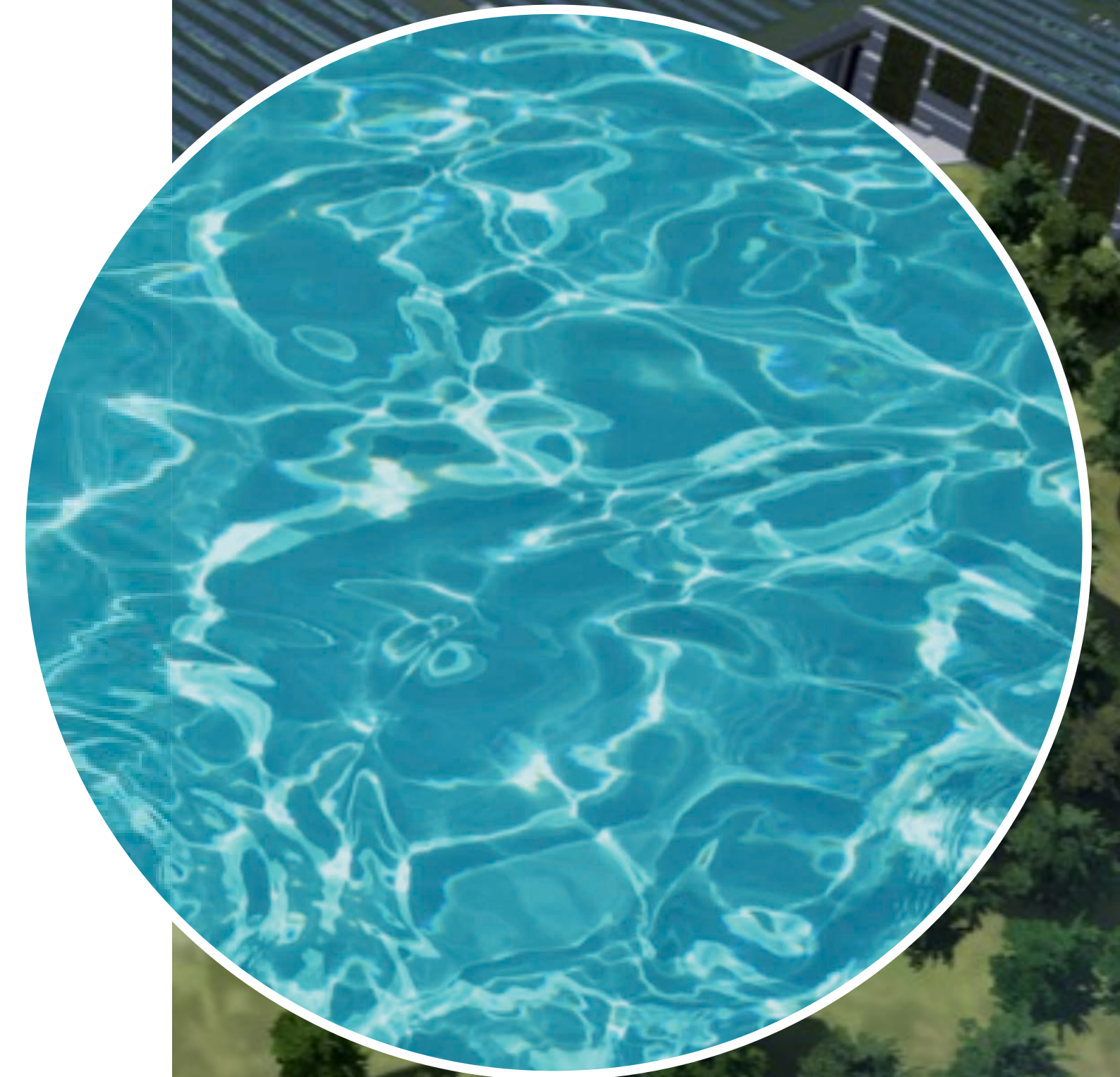
# Complete Water Management System



## Water regeneration and waste water:

Coverage of the total water requirement via

- Rainwater harvesting
- Ambient water (humidity drinking water)
- Cleaning in Process (CIP)
- Greywater and blackwater recycling
- "Zero Mass Source Panels"







**ANJA will create 100%  
of its necessary energy renewably**

**7** AFFORDABLE AND  
CLEAN ENERGY



**13** CLIMATE  
ACTION





# We create and store all of our own Energy

13 CLIMATE ACTION



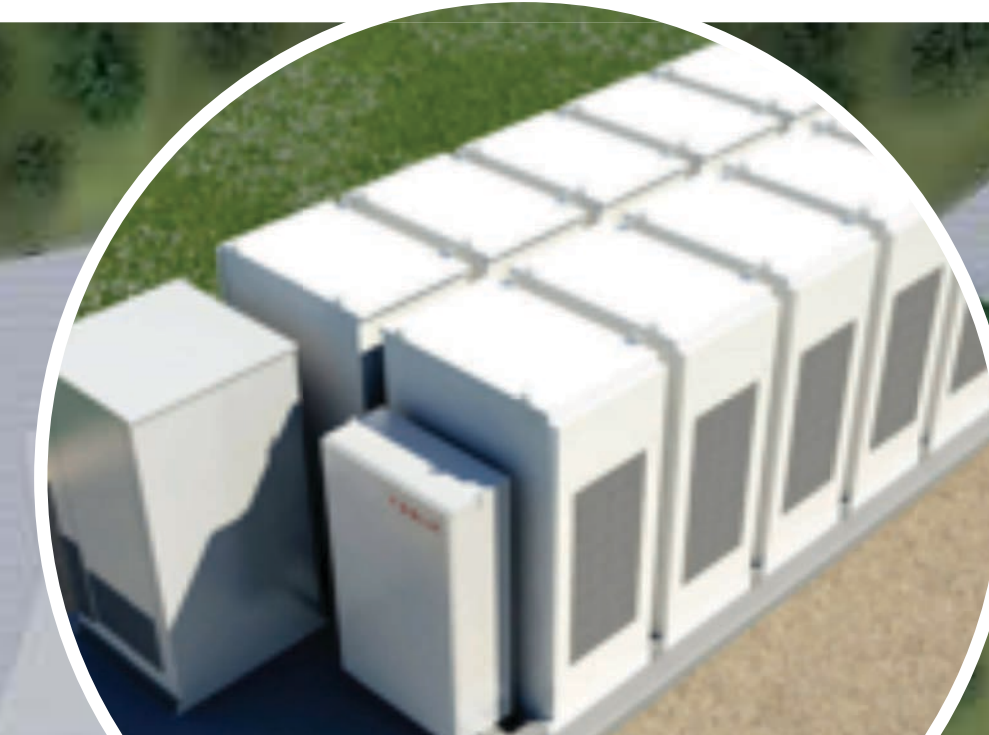
7 AFFORDABLE AND CLEAN ENERGY



## Energy Production

Panasonic Photovoltaik  
Module HIT® - N330

Vesta Wind-Turbines




## Energy Storage

TESLA PowerPack II  
Storage Batteries

Buffer Storage for volatile  
Energy Production





**ANJA will grow 100% of its produce locally with no pesticides, fertilizers, outdoor pollutants and it will have a higher nutritional value and better taste.**







**No Pesticides**

**Better Flavor**

**No Fertilizers**

**No contaminated Soil  
or Rainwater**

**Higher Nutrient Value**

**Locally grown**





At each respective location ANJA will  
create a sustainable agriculture and  
energy community

9 INDUSTRY, INNOVATION  
AND INFRASTRUCTURE



8 DECENT WORK AND  
ECONOMIC GROWTH



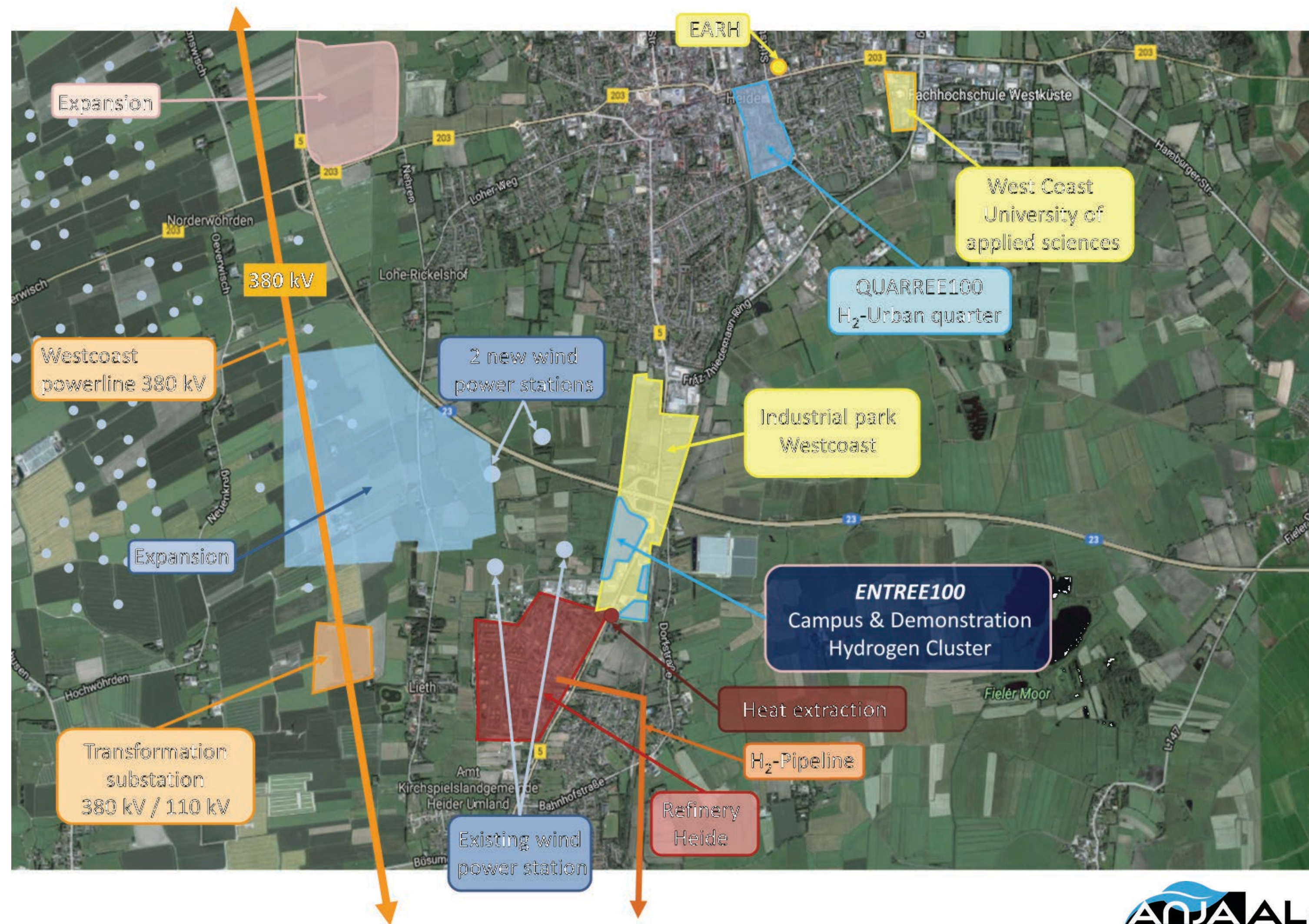
11 SUSTAINABLE CITIES  
AND COMMUNITIES





# Example: As a part of the Entree 100 Project in Heide

## Region Heide - Location







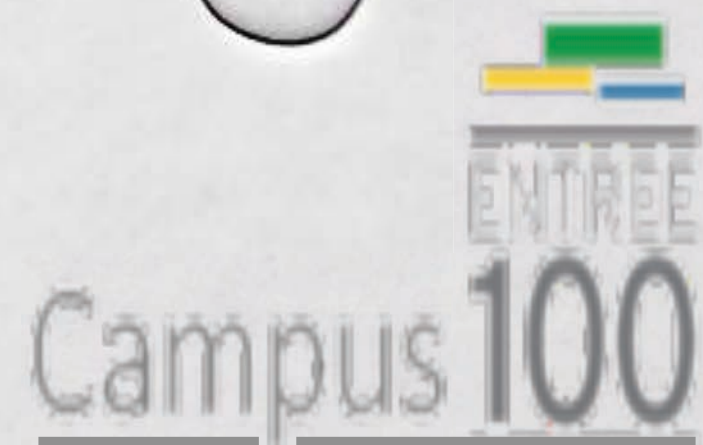
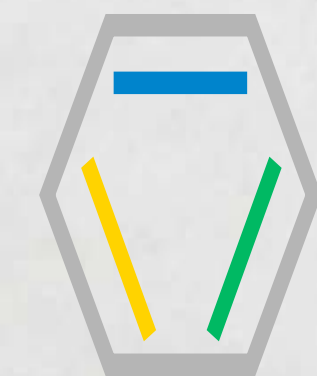
NESTrail



Wir fördern Wirtschaft



Landesprogramm Wirtschaft: Gefördert durch die Europäische Union - Europäischer Fonds für regionale Entwicklung (EFRE), den Bund und das Land Schleswig-Holstein



ALOHAS ECO-CENTER



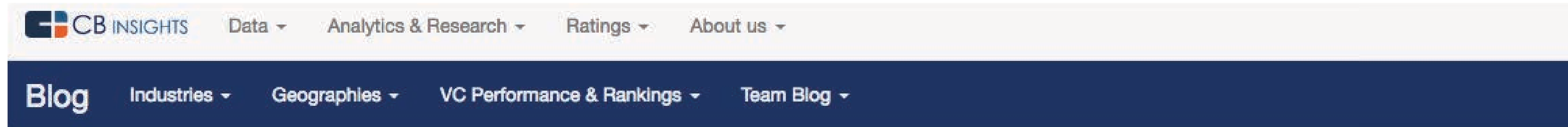
# ANJA = Adaptive Nutrition Joint Achievements





# CB Insights

[www.cbinsights.com/blog/industry-market-map-landscape](http://www.cbinsights.com/blog/industry-market-map-landscape)



MARCH 10, 2017

## Know Your Industries: 70+ Market Maps Covering Fintech, CPG, Auto Tech, Healthcare, And More





# AG TECH: 100+ TECHNOLOGY COMPANIES CHANGING THE FARM

## FARM MANAGEMENT SOFTWARE



## PRECISION AGRICULTURE AND PREDICTIVE ANALYTICS



## NEXT GEN FARMS



## MARKETPLACES



## ROBOTICS AND DRONES



## SENSORS



## PLANT DATA/ANALYSIS



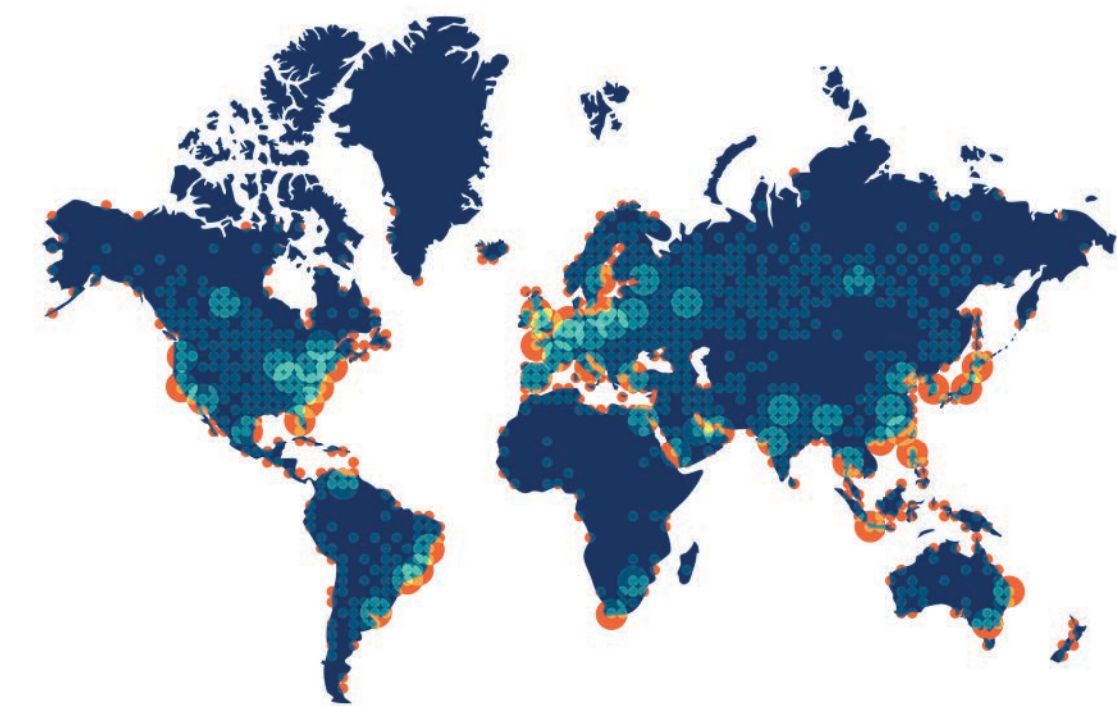
## SMART IRRIGATION





# 5 USE CASES OF AI + ROBOTICS IN AGRICULTURE

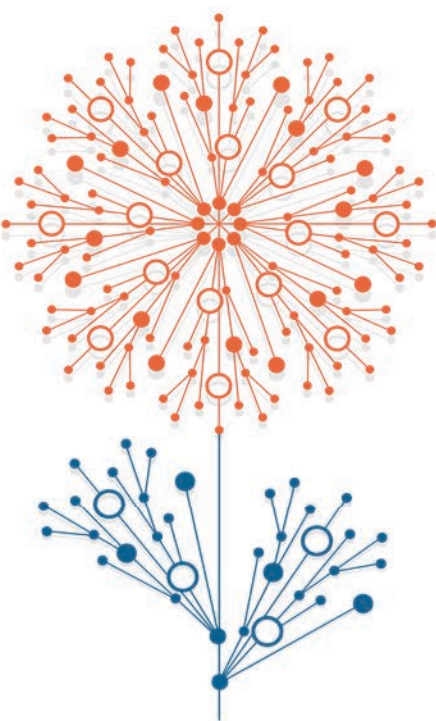
## ANALYZING SATELLITE IMAGES



## IN-FIELD MONITORING



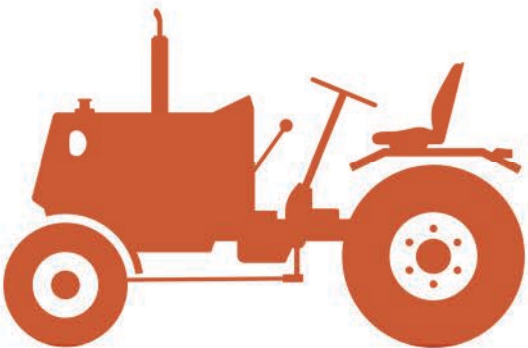
## ASSESSING CROP/SOIL HEALTH



## PREDICTIVE ANALYTICS



## AGRICULTURAL ROBOTS







# Plant Biotech Landscape 2017

## Bio-Stimulants / Bio-Fertilizers



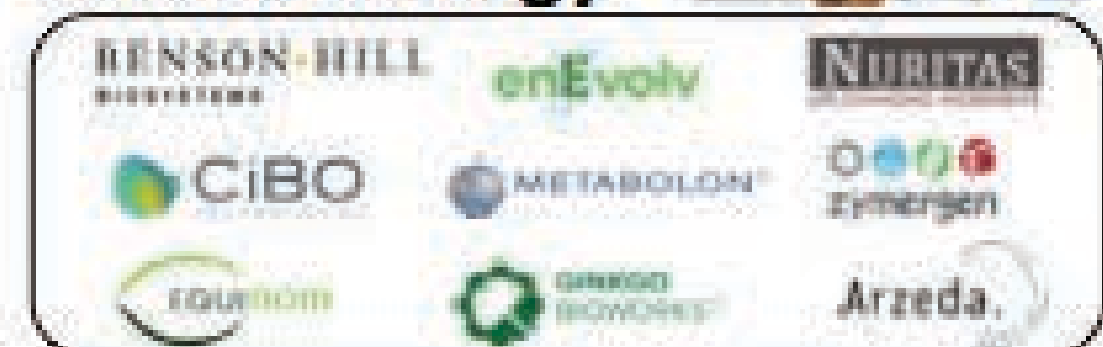
## Bio-Pesticides



## Breeding



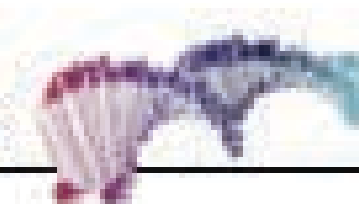
## Cloud Biology



## Biotech Traits



## Epigenetics



## Diagnostics / Data Analytics

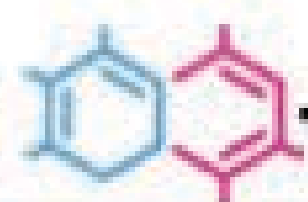






# Animal Biotech Landscape 2017

## Pharmaceuticals



## Biologicals



## Gene Editing



## Feedstuffs



## Diagnostics / Data Analytics



## Feed Additives







# FOOD & BEVERAGE BRANDS OF THE FUTURE

## COFFEE & TEA



## MEAT & DAIRY



## ICE CREAM & FROYO



## EGG & DAIRY ALTERNATIVES



## NUTRITIONAL DRINKS



## PROTEIN BARS



## INGREDIENTS & CONDIMENTS



## PACKAGED MEALS



## COCONUT WATER



## PROBIOTIC DRINKS



## ENERGY DRINKS



## WATER & FRUIT DRINKS



## SNACK FOOD



## CANDY & GUM









# **STOP and REVERSE GLOBAL WARMING**

1. Global Food Reform
2. Empower Women
3. Empower Girls
4. Rethink Refrigerants



