



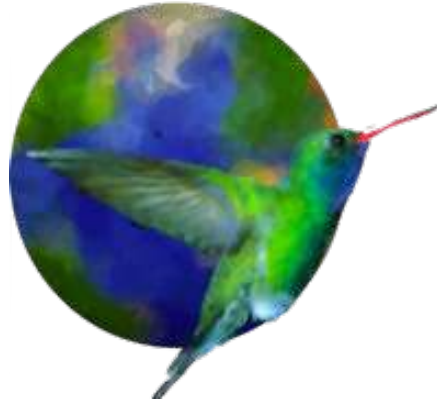
Pathways to a more sustainable future – innovation in waste!

This presentation was delivered by Gould League General Manager Anne-Maree McInerney at a recent Teacher PD Day.

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Should you require further information or wish for this to be delivered in your school as a PD for Teachers or built on it as a program for Students, please contact Gould League via [gould@gould.org.au](mailto:gould@gould.org.au) or Ph 9585 7860/0429 193 134.

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**The Blue Economy** is a physics and systems based approach to sustainable development inspired by nature.

It has a zero waste approach to economic development that unleashes creativity and entrepreneurship.

100+ innovations set to generate 100m new jobs in 10 years.

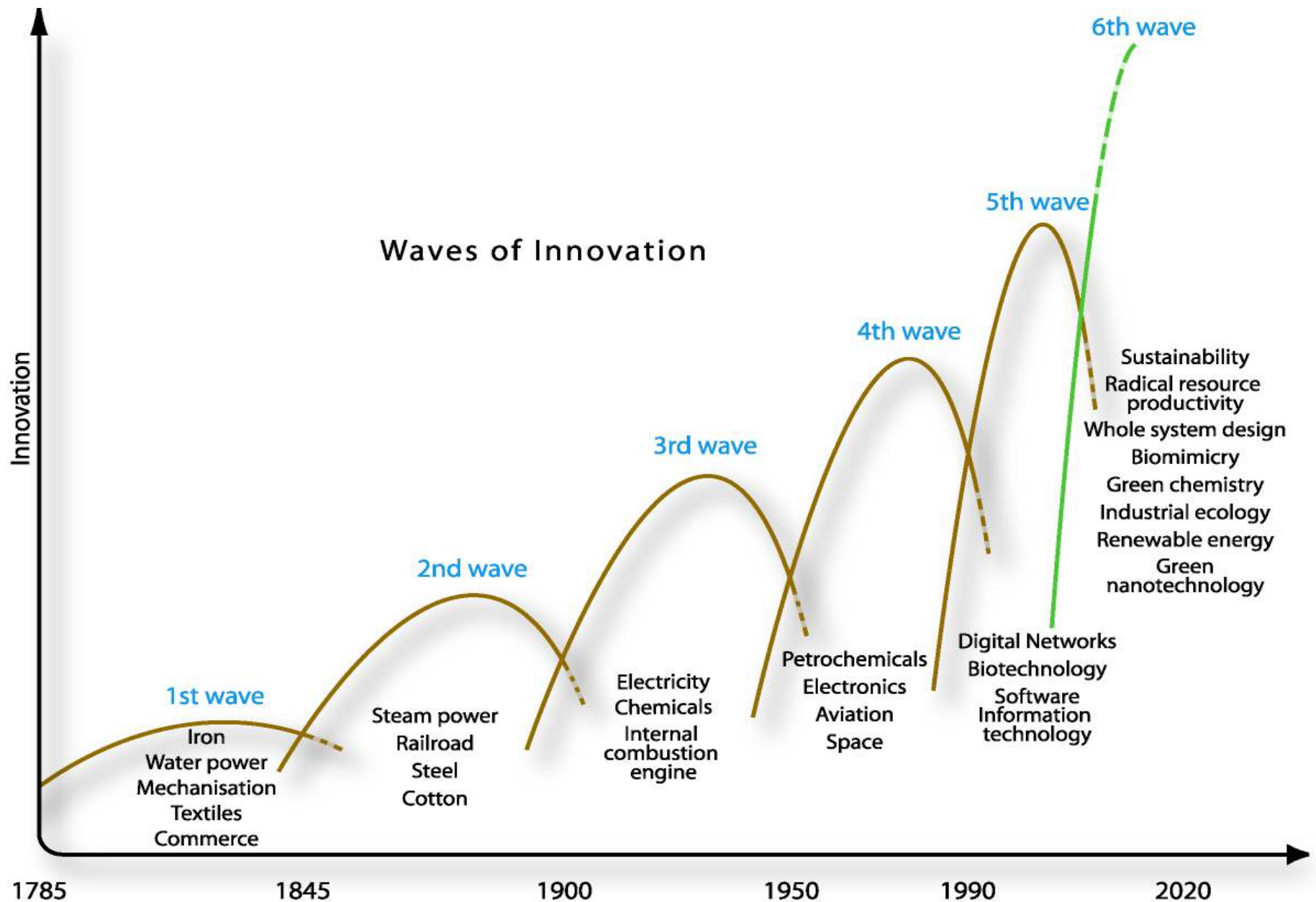
3,500 scientists world wide make up the Think tank – We are the Do Tank.

# The Blue Planet

where everyone and everything is connected



Photo - Earth Rising, Source: NASA



The Blue Economy contains all the elements of the 6<sup>th</sup> wave of innovation (as defined by the Natural Edge) + new economic models.



- ✓ Belief **we have a design problem** rather than a waste or pollution problem.
- ✓ Focus on re-use, recycling, up-cycling, closed loop systems – innovation inspired by nature.
- ✓ Incorporates purpose economy that focuses on values and purpose in business – and share economy in that we don't need to own all our assets.
- ✓ Shifting to new economy where the world moves from heavy industry to innovative new designs & biomimicry.

# Green

**Linear**

**Expensive**

**Can create waste and unintended consequences**

**Subsidised**

**Taxes**

**Cut Costs**

**Elitist**

**Scarcity** mentality

**Sacrifice so others may learn and grow**

# Blue

**Physics and Systems led with multiple benefits**

**Innovative**

**Zero waste**

**Competitive**

**Jobs**

**Adds more value**

**More equitable**

**Abundance** mentality

**Sharing to create community and win:win:win scenarios**











**\$600m sales year one.  
8 types of oil.**



**Esters** include lubricants, cosmetics, plastics, resins, explosives, bio-fuel, surfactants and synthesis of various industrial chemicals.

**Elastomers** - a polymer with viscoelasticity (having both viscosity and elasticity). Global revenues for rubbers are forecast to rise to US\$56 billion by 2020.









Oil from thistles blended with other sources, including olive oil residue and used cooking oils, and form the basis of third-generation Mater-Bi biopolymers.

50 per cent of the feedstock = Thistles grown on 'low-value, unproductive water scarce abandoned land (70,000 hectares). After extracting oil from the seeds, the remaining material is used by local farmers as animal feed, while the biomass is used to fuel the plant itself.







**Stone Paper - Paper  
made without trees that  
is recycled for ever...**











ANTI-MOTH



TEAR RESISTANT



PHOTO-DEGRADABLE



RECYCLABLE



SAFE



SOFT



WATER RESISTANT



ECONOMICAL

The production cost of stone paper is 40% less than traditional Paper.









# ULTIMATE SMOOTHIE MIX

✓ VANILLA ✓ CACAO ✓ NATURAL

[view products](#)

- BISCUITS
- BREADS
- BUNS
- CAKES
- DESSERTS
- PANCAKES
- PASTA & PIZZA
- SLICES
- WAFFLES
- WHOLE JUICE



ULTIMATE  
SMOOTHIE MIX

\$60.00



BANANA FLOUR

\$16.00–\$200.00





# THE FOOD WASTE CRISIS



## QUANTITY

We lose or waste **30%** of all food produced globally which equates to approximately 1.3 billion tonnes a year



## COST

The yearly cost of global food waste is estimated to be **\$990 billion**



## EMISSIONS

Food losses represent a waste of resources in terms of land, energy, water and inputs, and leads to unnecessary **CO<sup>2</sup> emissions**

According to the FAO, if food wastage were a country, it would be the third largest CO<sub>2</sub> emitting country in the world after China and the USA. [The world urgently needs a sustainable solution to tackle food waste.](#)









A photograph of an industrial facility with complex piping, metal walkways, and large storage tanks, serving as the background for the MagMeal section.

## MagMeal™

MagMeal™ is a sustainable, high quality insect protein derived from black soldier fly larvae.

A photograph of an industrial facility with complex piping and a worker in a blue uniform and white hard hat, serving as the background for the MagOil section.

## MagOil™

MagOil™ is a versatile, natural oil that is suitable for use in a number of animal and aquaculture feeds.

A photograph of an industrial facility with large stainless steel tanks and complex piping, serving as the background for the MagSoil section.

## MagSoil™

MagSoil™ is an organic soil conditioner high in nitrogen, phosphorus and potassium.



# AgriProtein technologies

## EXTERNAL COSTS OF SOY MEAL PER TONNE \$3 200



	3 200	Harvest
	-	Production
	3 025	Land
	10	Fossil Fuel Consumption
	100	Agro-chemical & Fertiliser
	40	Fresh Water
	-	Fish Stocks
	5	Air/Water/Land Emissions

## EXTERNAL COSTS OF FISH MEAL PER TONNE \$2 600



	2 500	Harvest
	100	Production
	-	Land
	385	Fossil Fuel Consumption
	0	Agro-chemical & Fertiliser
	15	Fresh Water
	1 450	Fish Stocks
	750	Air/Water/Land Emissions

## EXTERNAL COSTS OF MAG MEAL PER TONNE \$50



	-	Harvest
	50	Production
	-	Land
	10	Fossil Fuel Consumption
	-	Agro-chemical & Fertiliser
	10	Fresh Water
	-	Fish Stocks
	30	Air/Water/Land Emissions



Market Price per Tonne \$420



Full Cost per Tonne \$3 620

Market Price per Tonne \$1 800



Full Cost per Tonne \$4 400

Market Price per Tonne \$1 350

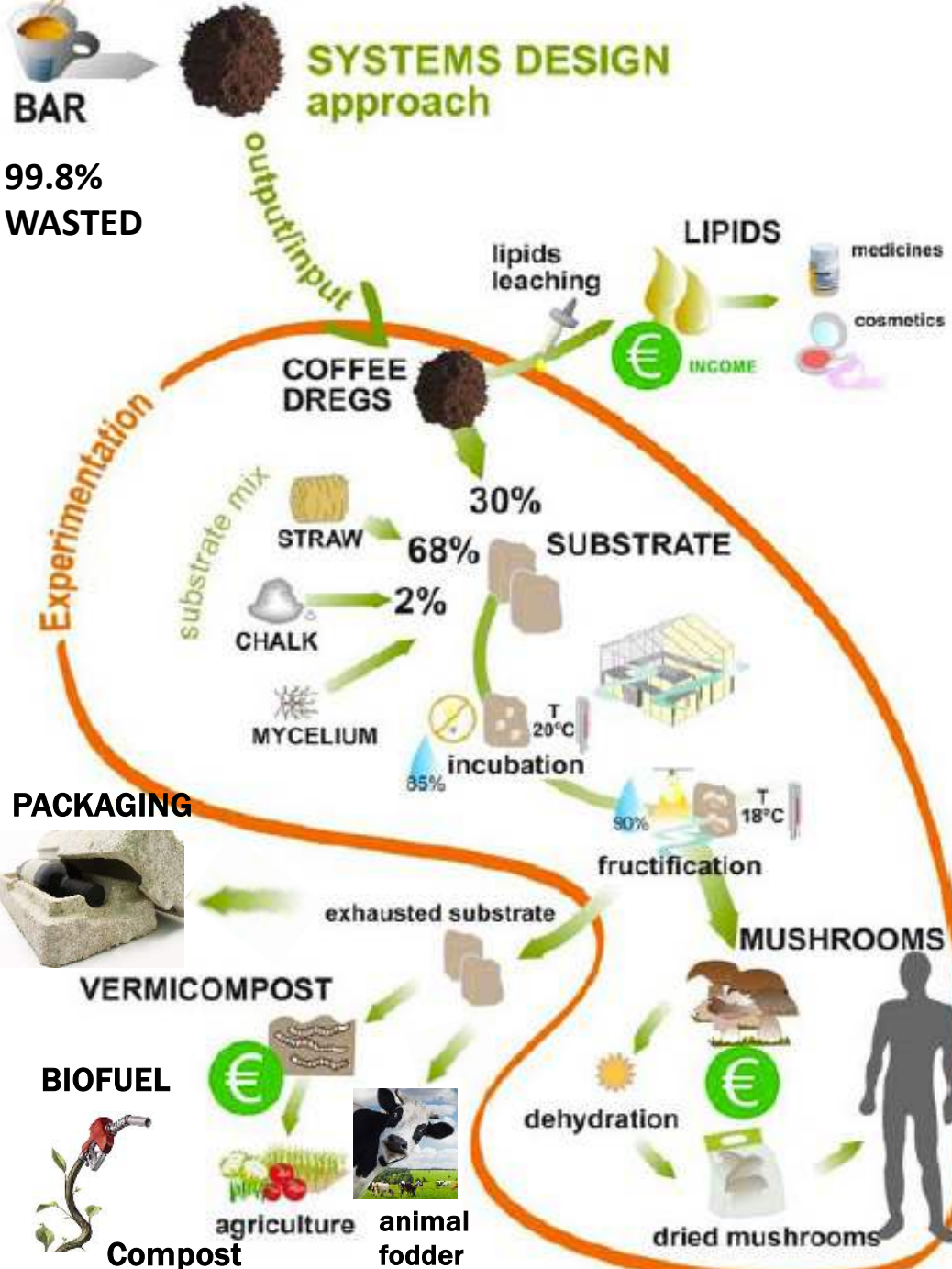


Full Cost per Tonne \$1 400

The international trade in animal feed has an estimated turnover of \$400 billion every year.



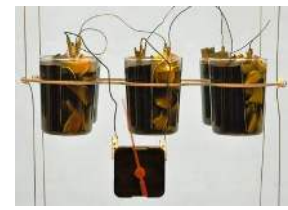




## TEXTILES



## BATTERIES



Odour absorbing shoes



Odour Absorbing Paint





Coffee Grounds



Master Batches



Coffee Oil



S.Café® Yarn



Cosmetics



Drink it - Wear it

One cup of coffee can be turned into two T.Shirts



S.Café® & ICE Café® denim

Give you brand new comfortable for all day.

S.Café® and ICE Café® technology can give all day  
Comfortable wear experience to you.





Amazing insulation with recycled material



65%  
Recycled PET Bottle

65% Recycle Hollow Fiber



35%  
Recycled S.Café® Fiber

35% Recycle  Fiber



Sustainable Technology

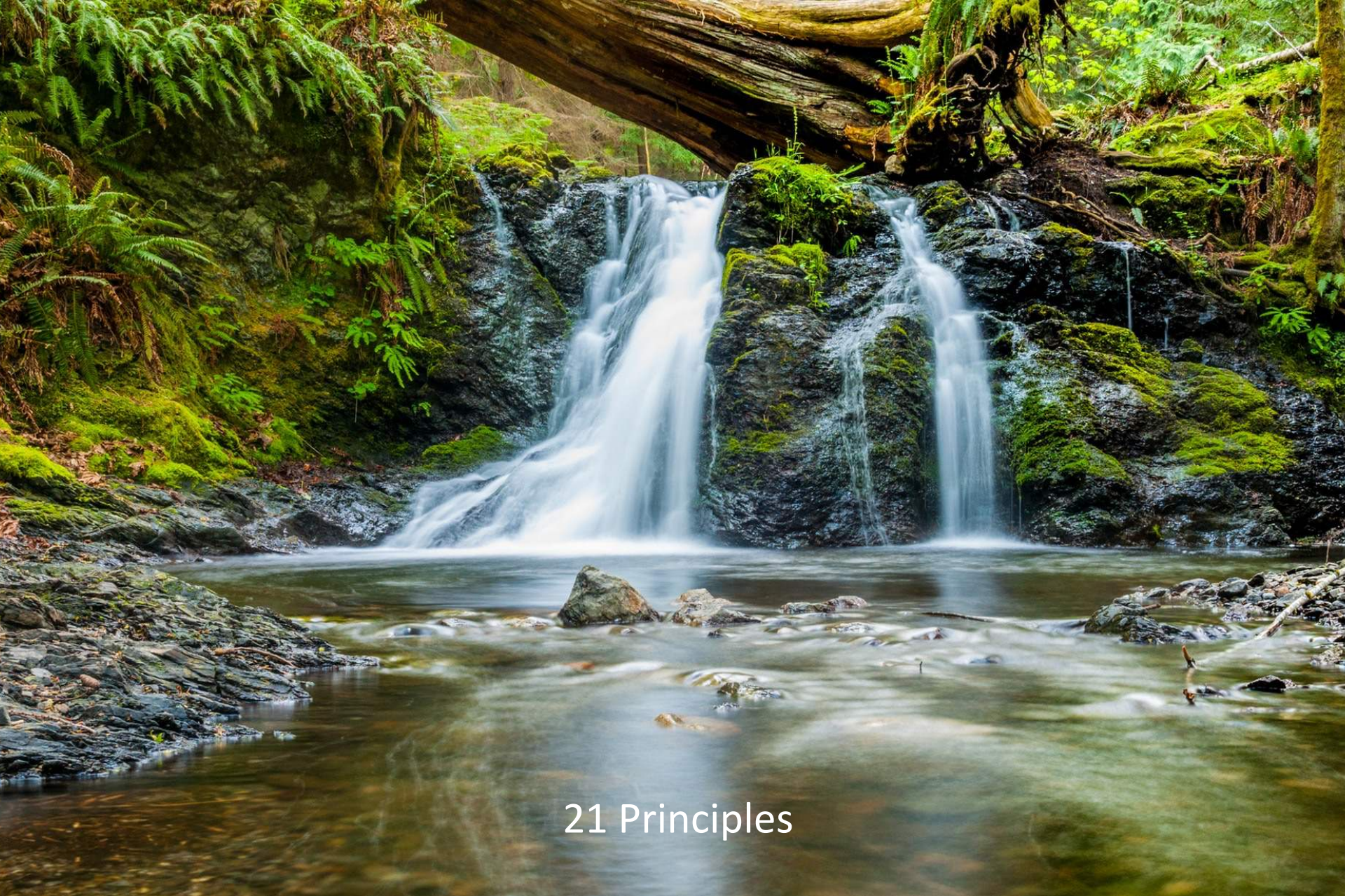


## KEY LEARNING

Natural, Biodegradable and Renewable DOES NOT equal sustainable.







## 21 Principles

In nature – water, air and soil are the commons free and abundant.



## Urban agriculture using commons resources (rain) aids food security





# AQUAPONICS

## Smart Floating Farms







In nature everything is bio-degradable (it's just a matter of time) and everything is connected and evolving towards symbiosis.





Natural systems are non linear – they cascade nutrients, matter and energy.  
Gravity is the main source of energy, solar energy is the second renewable fuel.

Water is the primary solvent (no complex, chemical or toxic catalysts).

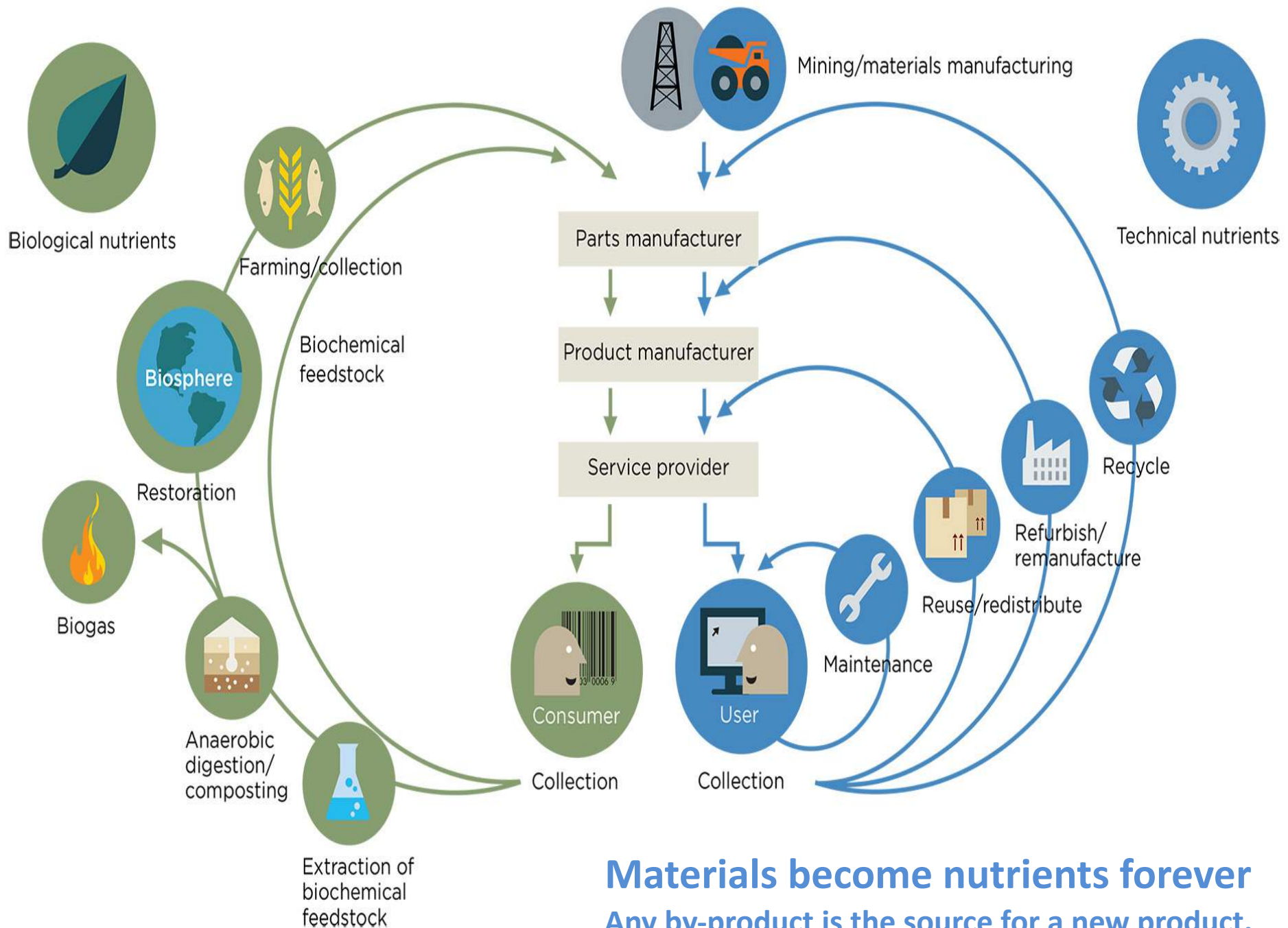


In nature one process  
generates multiple benefits  
and there is zero waste...



Waste does not exist in natural systems.





**Materials become nutrients forever**  
**Any by-product is the source for a new product.**

# Technical Nutrients







Ekocycle  
Harrods, UK



# Biological Nutrients







1 tonne silk = 9 tonnes of fertilizer



Mulberry silk is converted to spider silk using only pressure and moisture controls just like the spider does.

Photo: Courtesy of Oxford Biomaterials (UK)



# Silk

- Stronger and more durable as titanium
- Silk based
  - nano-engineering
  - orthopedic implants
  - replacement joints
  - blade razor



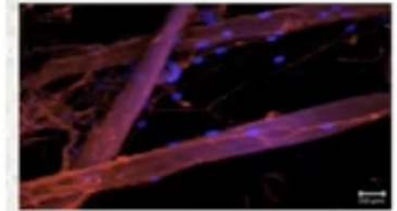
Source: Voice of Russia, News.cnet.com  
Photo: RIA Novosti



• Suture Thread



• Nerve Repair Conduit



• Bone Graft Material



• Cartilage Repair Device



The world market for biocompatible devices already approx \$20b annually with a growth rate of 10%.



An abstract graphic on the left side of the slide, consisting of several overlapping, flowing blue lines that create a sense of movement and depth. The lines are in various shades of blue, from light to dark, and have a soft, ethereal quality.

# Exercise



Group One - Local community working in **clusters** to achieve zero waste, economic diversity, job creation, happiness and well being.

- |                         |   |
|-------------------------|---|
| 1. Builder              | 6. Botanic gardens/nursery              |
| 2. Upholster            | 7. Café restaurant                      |
| 3. Apple & pear orchid  | 8. School                               |
| 4. Cottage industry hub | 9. Menshed                              |
| 5. Childcare centre     | 10. Retirement village<br>/nursing home |





thank you!

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