



**BIO-PHOSPHATE RECOVERY**  
**from unexploited biomass**

**"ABC" Animal Bone Char: recovered and concentrated  
bio-phosphate innovative fertilizer**

**EIPP-20170255**

**Edward Someus / Terra Humana Ltd.**  
**www.3Ragrocarbon.com      biochar@3Ragrocarbon.com**

# Terra Humana Ltd.

## Evolution 1989 – 2018



- Industrial organization since 1989 (ALSTOM subsidy JV).
- Specialized on bio-refinery with advanced 3R zero emission carbonization process:
  - ✓ Added value utilization of unexploited biomass streams for
  - ✓ Recovery of the **critical raw material pphosphorus** and bio-energy by carbonization process.
  - ✓ Simple & transparent ownership structure.

**TRUSTED EU  
recommendations &  
references since 2002**



# Problem statement, Customer pain points



- **Mineral phosphate (P) resources** with higher quality already **depleted**, while food production **demands expanded**.
- Mineral P is highly contaminated with Cadmium/Uranium.
- **Mandatory EU regulation change 2020** = contaminated mineral P will be phased out <2025.
- **No recovered + safe P-products on the market.**
- **Farmers are highly affected by the volatility in fertiliser prices.** Price increase have been +700% in 2008.
- **EU farmers dependent (>95%) on imports.**

**CRITICAL raw material with high SUPPLY RISK:  
No Phosphorus => No Agriculture => No Food**

# The solution: advanced clean technology & products

- ✓ **Unique** high temperature (850°C) processing.
- ✓ **High efficiency** & autothermal.
- ✓ **Zero emissions:** meet strict EU norms >2020.
- ✓ **Combined recovered fertiliser & bioenergy.**
- ✓ **Market demanded** products.



**The Bio-Phosphate system is an original solution**  
**IPR legal protected technology & specialized products**  
**Comprehensive full value chain industrial management**

# Mission



- 1) **Substitution** of the contaminated critical raw material chemo-synthetic phosphate fertilizers **with natural, safe, renewable and efficient bio-phosphate at less cost.**
- 2) **Process recovered Phosphorus in economical industrial scale** and European dimension with business driven market take-up & B2B commercialization.
- 3) **Meet organic and low input farmers increasing market demands at high quality for less cost** under international market competitive conditions.
- 4) **Meet new regulations** in the EU, USA and AU - beyond 2020 for long term.
- 5) **100% substitution** of critical raw material P-rock used in organic farming on EU28 level before 2030.

# Business modell

	<b>TECHNOLOGY FRANCHISE</b>	<b>PRODUCT SALES</b>
<b>2019</b>	<b>3R industrial franchise replication model implementation</b>	<b>Bio-Phosphate Green energy</b>
<b>Product Sales</b>	3R franchise model	€ 15 M/y product sales by 2021
<b>Franchise Sales</b>	<b>10 replicates &lt;2025. franchise fee: 15%</b>	<b>+€22.5 M/y franchise fee 2025</b>
<b>ROI</b>	<3 years for investors	<1 year for users

- 1) Global fertiliser market €121.1 billion, increase of 31.9% since 2010. Mineral fertilizers 80%.
- 2) **EU fertiliser market** EUR 20-25 billion / year, mainly **driven by imports from outside EU.**
- 3) Organic farming market >6% from total, yearly increase +10-15%.
- 4) **BIO-PHOSPHATE market position: a strategic substance in the organic fertilising sector.** There are no any other high P<sub>2</sub>O<sub>5</sub> content (30%) pure materials on the market.
- 5) **CUSTOMERS:** EU wide Producer Organizations, fruit/vegetables farmers. Other use: adsorbent for water treatment.

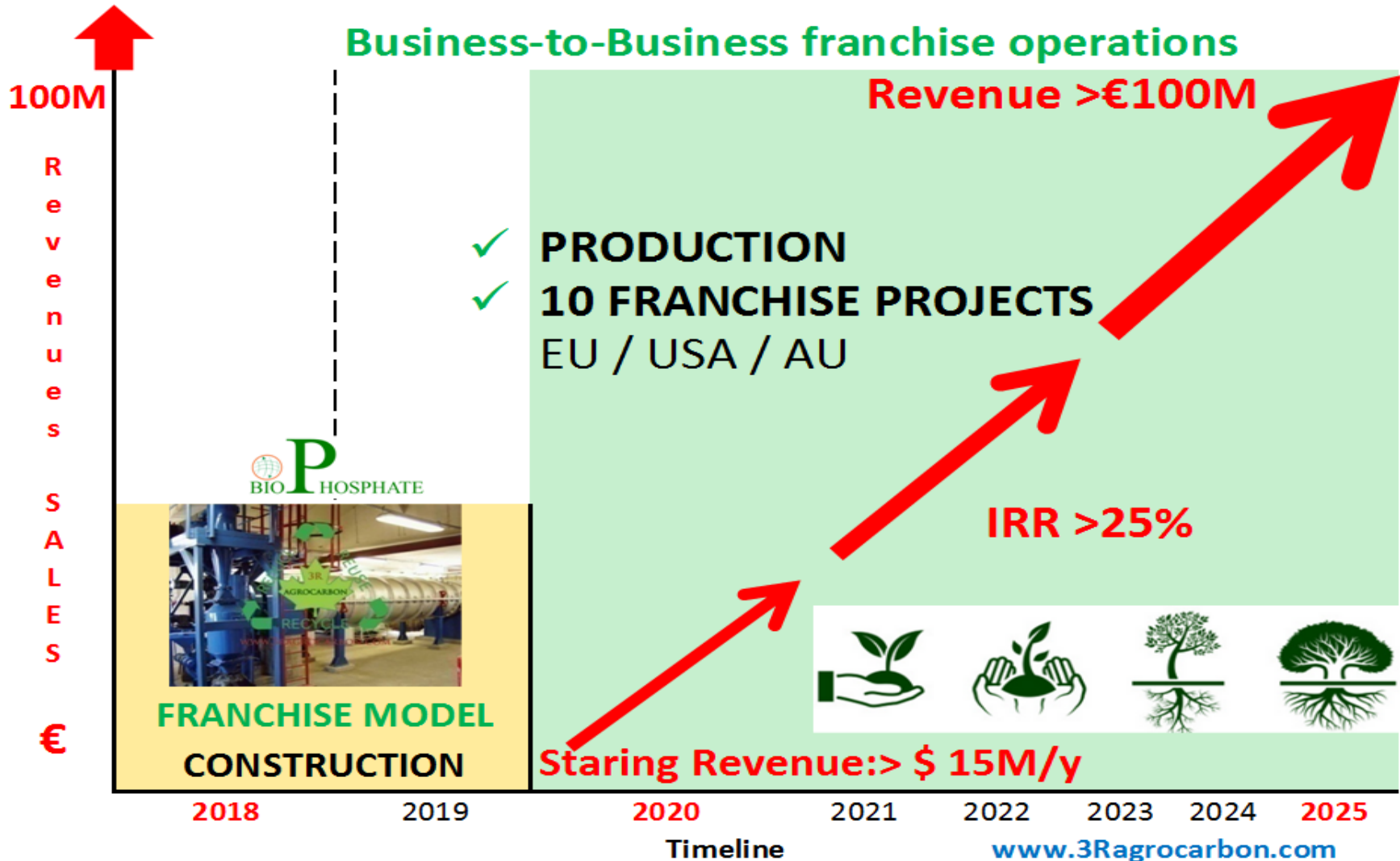
# Market competition



Performance	Bio Phosphate	Mineral Phosphate	Struvite Mg-Phosphate
P <sub>2</sub> O <sub>5</sub> %	30%	30%	22%
Contamination	Pure organic	Cadmium + Uranium +...	Pharma + illicit drugs
P-nutrient release	Controlled release	Rapid Release	Low solubility
Agronomic efficiency	P Utilization >90%	P Utilization <20%	P Utilization <5%
P utilization cost €/kg	1.75/kg	€1.98/kg	€8.75/kg



# Financials: CAPEX expansion investment € 10M (series B)



# Bio-Phosphate Team

with high implementation ability



**Edward  
Someus**  
(age 67)

**Director & owner.** Inventor, senior industrial process engineer, designer, pyrolysis/carbon specialized.

**Experience:**  
+ 40 years



**Prof. Dr.  
Jozsef Valyon**  
(age 72)

Material and environmental chemistry. Green chemistry analytical specialized.

**Experience:**  
+ 45 years



**Prof. Dr.  
M. Pugliese**  
(age 41)

Large scale agri industrial applications of recovered fertilizers. Agronomy, agri economy.

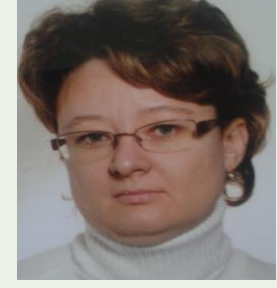
**Experience:**  
+ 17 years



**Sandor  
Somfai**  
(age 40)

Chief accountant. Marketing, sales and economy of horticultural products. Farmers/agri market networks.

**Experience:**  
+ 16 years



**Magdolna  
Halasz**  
(age 43)

Bio-engineer. Solid state fermentation and formulation of Bio-Phosphate for added value upgrade.

**Experience:**  
+ 18 years

# Use of Funds



**Expansion finance €10M** investment searched for implementation of TRL9 full industrial BIO-Phosphate franchise replication model 2018/2019.

- **Equity investment.** Conditions tbd.

**Use of funds: CAPEX.** (manufacturing, installation, training and production start up, of the complete/comprehensive industrial installation at 20,800 t/y throughput capacity. The construction takes 12 months.

- **International marketing:** already ongoing in the EU, USA and Australia.

## Closing remark:

The Bio-Phosphate is right product  
with right price in right time



- ✓ Phosphorus is a critical raw material with high supply risk.
- ✓ No Phosphorus = No Agriculture = No Food.
- ✓ **Commercial implementation** of breakthrough, evidence-based and innovative technology.
- ✓ **Targeting social and environmental impacts**, improved food quality & safety for less cost.
- ✓ **Exceptional team**: senior experienced and able to create sustainable and viable businesses.
- ✓ **Attractive financial position**: demonstrating sustainable growth of the business to deliver impacts with a realistic exit strategy and returns.

# CONTACT



**Edward Someus**

Biochar S&T senior engineer

**biochar@3Ragrocarbon.com**

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