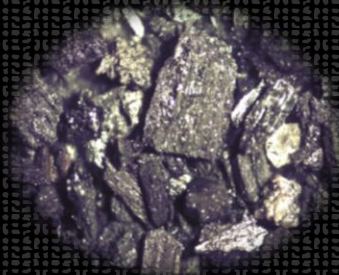


Alternative uses of biochar



GECA
Environnement

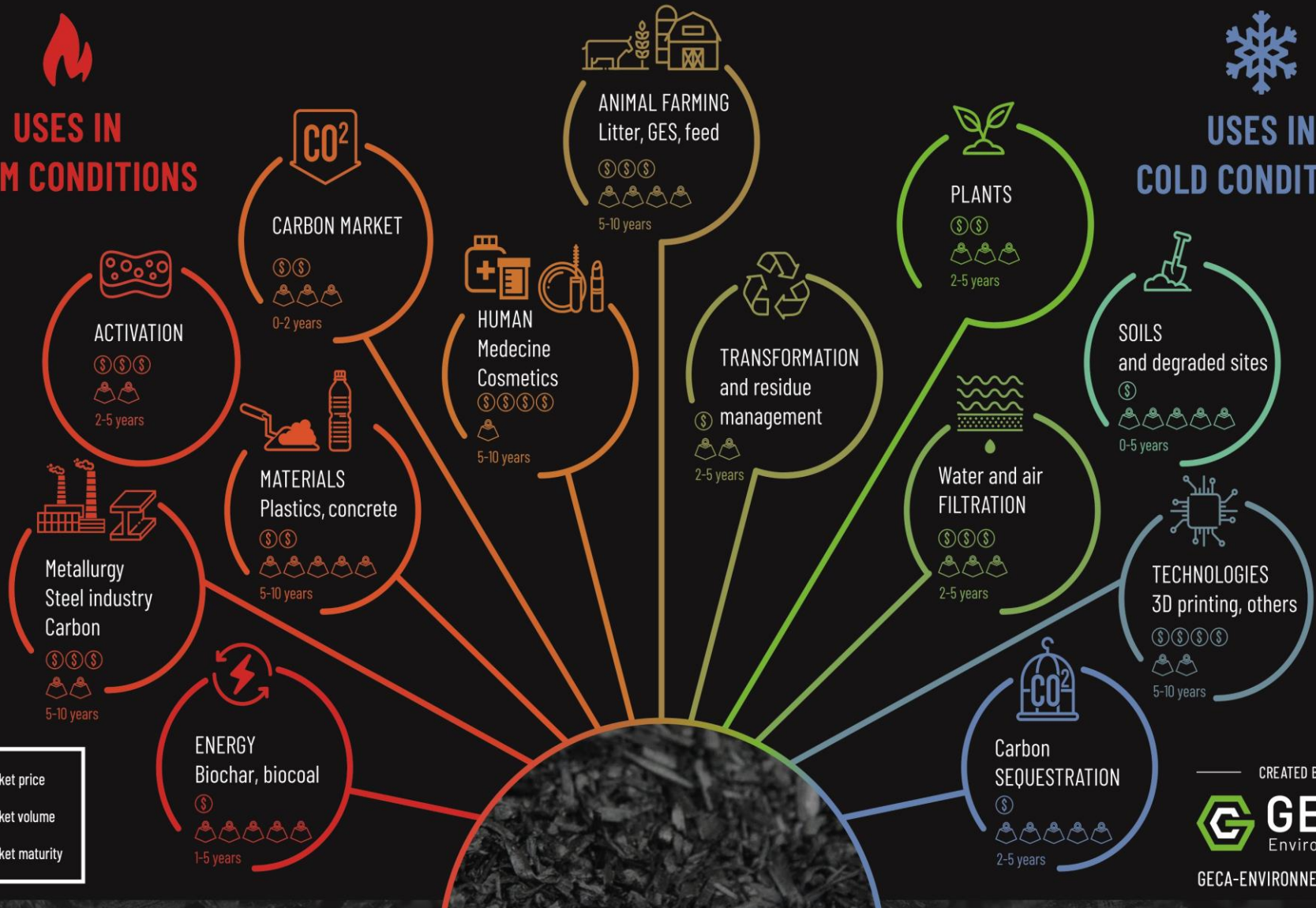
by
Suzanne Allaire, Ph.D.

USBI, July 2019
Fort Collins, USA

BIOCHAR MARKETS

USES IN WARM CONDITIONS

USES IN COLD CONDITIONS



Market price
 Market volume
 years Market maturity

Biochar in mining industry

Usages

Property

Energy

85%C, 26-32 MJ/Kg

Ore process
properties

Specific chemical

Water treatment

High exchange capacity

Land reclamation

Volatile and fixed C



Each usage need its biochar, even
for specific types of industry



Biochar in the compost industry



Transforming into biochar should not be the 1st reflex for residues, but rather to improve life cycle of residues



Biochar in cosmetics



Toothbrush, face brush



Cream, exfoliator



Make up



Digestive system cleaning



Shampoo

Easy to find everywhere, little regulation except when ingested
High value biochar with specific properties for each product



Biochar in animal production



Feeding



Bedding

Manure storage tanks

Air and water filtration

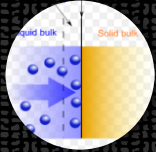


Composting

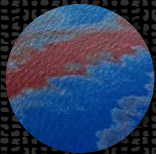
Biochar can be used in all aspects of animal production,
some are government controlled, others are not
Uses do not need high carbon content



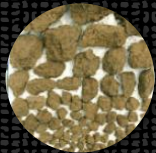
Biochar in oil/gas industry



Mazout/fuel sorption on surface water (ex: spill)



Fuel sorption on solid surface (ex: spill on asphalt, concrete)



Methane sorption from gas extraction



Air filtration from tank



Catalyst for biodiesel production: precursor for heterogeneous acid catalysts, but often must be transformed, 400-675C



Bio-oil upgrading and tar decomposition (Catalyst)



Biochar in high tech

Graphene

- High carbon content, made at high temperature, difficult to extract

Superconductor, supercapacitor

- High carbon content, made at high temperature, may need to be grafted

3D printing

- Long fibers with recycled PET, less than 1%, ok if low carbon content

Batteries/electrodes

- Porous biomass, encapsulated with S et SE or others, super fine, high carbon

Fabrics

- Gas sorbing fabric, insulating fabrics, large surface area, water repellent

In high tech applications, we often look for high carbon content and surface area, thus made at high temperature



Biochar in alternative uses



Hunger for innovation

- Biochar found in lots of inventions
- Allows for all kinds of biochar, each having their new markets
- Laws and regulations must be modified to accept several of its uses



Wealth

- Helps decreasing imports for more local economy
- Affects large number of industries, thus communities
- For high tech, tend to be expensive, good revenues
- For traditional industries, tend to be cheap as commodity



Environment

- Favour RRR and new markets
- Could be important part of local, circular and green economy
- New route for residues that would otherwise go to landfills or be buried
- Neutral carbon footprint or better



Thanks



To the USBI for this event !
To all of you for being here today !

For more information



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