# Citizen engagement

- What audience are you focusing on?
- Refine your massages about biochar and it benefits to appeal these audiences
- Certain stakeholder groups are likely to be attracted to biochar
- Early adopters make excellent biochar champions
- How do you engage your identified stakeholders?

# Stockholm Biochar – the Experiment

- Inspiration from the Big Biochar Experiment in Oxford  started by Cécile Girardin (Oxford Biochar)
- The Stockholm version 2016
  - Allotment owners in Stockholm, 65 participants
  - 5 litres of biochar per participant, choice of 3 crops
  - Varying results but only positive responses to the Experiment
  - Understanding that biochar works longterm



# Stockholm Biochar – the Experiment

The Stockholm version 2017

- Allotment owners and beginners to gardening from Fortum and Stockholm Vatten och Avfall
- 125 participants
- 1 litre of biochar per participant


# Continuing in 2017

- Information on how to try biochar is available to everyone via our website. All citizens are free to collect biochar from the recycling station by the biochar plant. So far 1200 bags of biochar has been handed out and 750 people have collected biochar from the recycling center.
- Evaluation of the project and the biochar plant

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# Implementation stakeholders

**AUTHORITIES**
- Permits
- Carbon credits

**RESEARCH INSTITUTES**
- Validation
- Credibility
- Replication


**SITE NEIGHBOURS**
- Acceptance
- Dose it work with their activites

**FINANCIERS**
- Competitions, calls etc.

**MEDIA**
- Political and citizen engagement
- Communicational value

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# Making a profit on biochar

Biochar Plant

Substituting soil with self-produced biochar

Ground work

Turning waste into resource

Connection

Selling heat

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# Learnings

- Investigate your neighbours and connection points when you choose a site.
- Few biochar plant suppliers. Innovative companies and small organisations.
- Different plants requires different demands on the biomass. Pre-treatment might be necessary.
- Map the logistics around the plant (biomass, biochar, heat, study visits)
- A strength with different competences from the different organisations.
- Need of education and information (authorities, municipal companies, technicians, politicians, potential biochar users)

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# Swedish biochar revolution

- Municipality of Eskilstuna
- Several farmers
- Ängsgärdets biokol Ek. förening ~150 000 dollars
- ETC Solar
  - Solar energy company
- Skånefrö/Ecoera
  - Private producer of seeds
  - ~3 million dollars in national funding
- Several municipalities with plans of pre-feasibility studies

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# Replication of the Stockholm Biochar Project

# Bloomberg Philanthropies

*At Bloomberg Philanthropies, we believe* ***solutions*** *to the world's most pressing problems, from climate change to aging populations,* ***can be found in cities****.*

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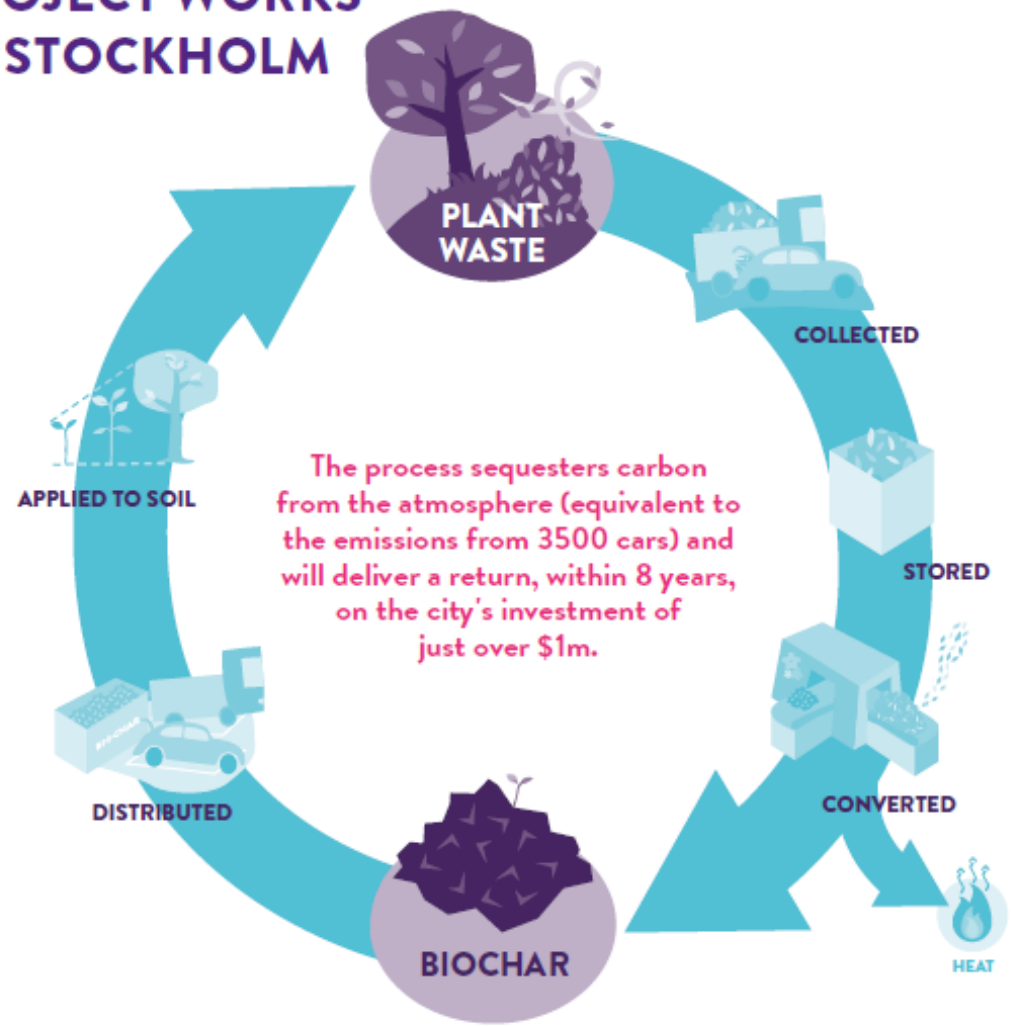
# HOW THE PROJECT WORKS IN STOCKHOLM






## COLLECTED

**NO ADDITIONAL FINANCIAL OR CARBON COST**

Both citizens and the city already deliver park and garden waste at a network of waste management centers across Stockholm.

## STORED

**NO ADDITIONAL FINANCIAL OR CARBON COST**

These waste management centers already have plant waste storage facilities.


## CONVERTED

**HIGH ADDITIONAL FINANCIAL COST**

The project requires an upfront capital investment, both to purchase the plant and prepare the site. Plant waste also needs to be chipped before it can be used in the plant.

**NEW REVENUE**

As well as turning plant waste into biochar, the carbonization process produces heat which is sold into the grid in order to heat local homes.

## DISTRIBUTED

**NO ADDITIONAL FINANCIAL OR CARBON COST**

Citizens and city gardeners pick up biochar from waste management centers when they are dropping off their plant waste.

**NEW REVENUE**

Biochar is sold to the open market and to the the city's traffic adminstration team (the department that manages the city's trees). It will be gifted to citizens.

## APPLIED TO SOIL

**NO ADDITIONAL FINANCIAL OR CARBON COST**

City gardeners and citizens apply biochar to their parks and gardens in the course of their regular activity.

**NEW CARBON SAVING**

When planted with trees or plants biochar increases growth while sequestering carbon dioxide from the atmosphere.



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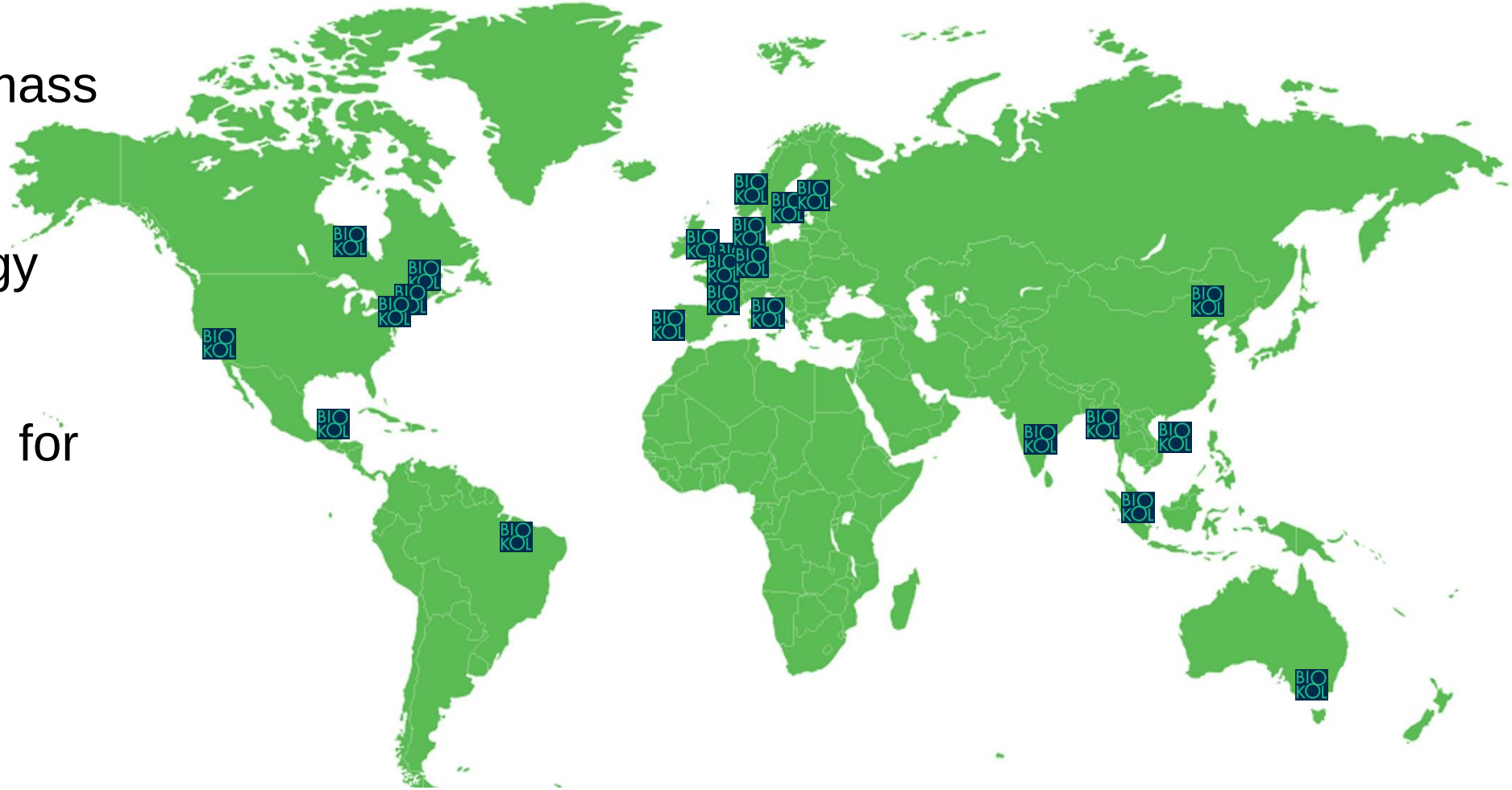
# Welcoming visitors

- 40 study visits during March – September 2017
- Municipalities, energy companies, politicians, engineering entreprises and waste treatment companies.
- 8 different countries


# Easy to replicate globally

- Access to biomass
- Need for energy
- Understanding for biochar

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# Group discussion

- 3 potential replicant cities with different situations
- City A
  - Economically strong country
  - Existing green waste handling system
  - Climate and environmental issues are prioritized
- City B
  - Economically semi-strong country
  - No green waste handling system
  - Climate and environmental issues are not prioritized
- City C
  - Economically struggling country
  - No green waste handling system
  - There is little discussions on climate and environmental issues

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# Questions for you as a replicating city

- What do you need to do to replicate?
- Where do you want to be?
- What is your trigger in SBP? waste, biochar use, energy, etc.
- What are the barriers?

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# Describe the approach to get city A, B and C to replicate the Biochar Project

- Form groups of 4
- Note down your results

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# Thank you for your attention

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