

What is more sustainable?

Overview of bio-cups project Wageningen UR

José Potting (Environmental Systems Analysis; May 2011)



Content

Is there a problem ?

Are there alternatives ?

Are the alternatives sustainable ?

Can we help our planet ?

Is there a problem ?

Coffee machines at Wageningen UR:
~ 2.5 mln disposable polystyrene cups



~ 1 TJ_{primair} energy
~ 15 tons of waste

Ambition Wageningen UR

Still those cups. What a waste of resources, what an unnecessary waste !

Front-runner in sustainability:

- Research & education
- Managing own organisation

Sustainability actions:

- ...
- Upgrade environmental performance disposable cups
- ...



Are there alternatives ?

fossil fuels



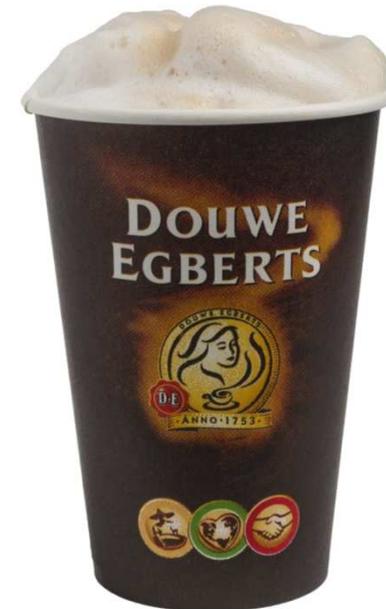
“fossil plastic”
(~100% polystyrene)

bio-based



“bio-plastic”
(~100% poly lactic acid)

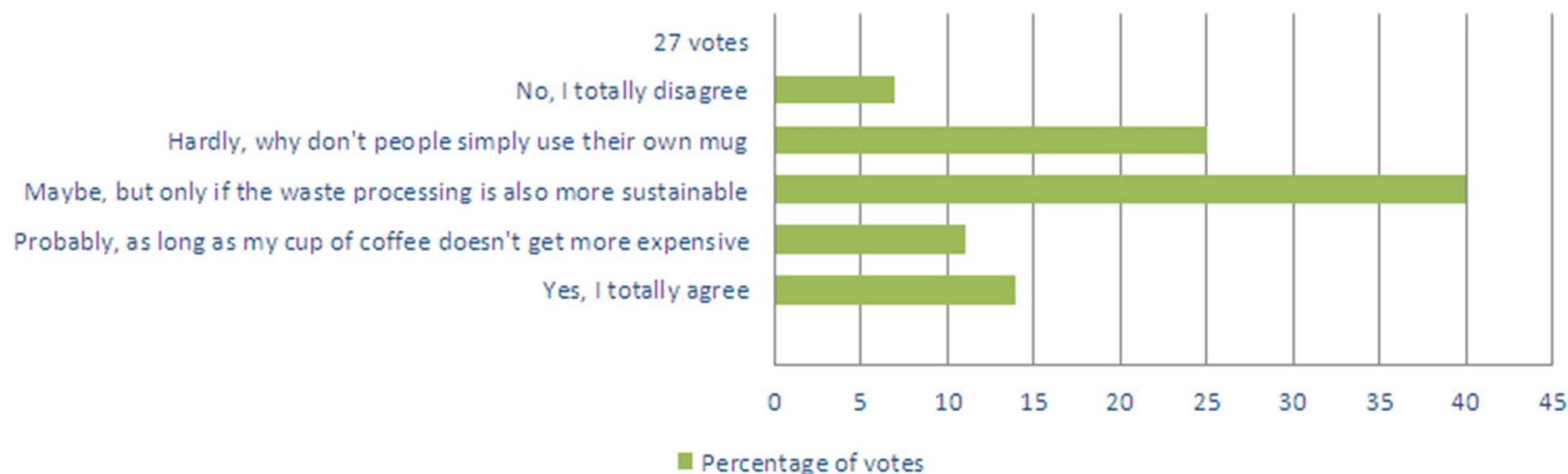
bio-based



“bio-paper”
(mainly paper, thin
poly lactic acid coating)

Interim results of biocups-poll

Biocups benefit the environment



Sustainability site Wageningen UR

<http://www.intranet.wur.nl/nl/organisation/interne-projecten/duurzaamheid/duurzaamheid/home/pages/default.aspx>

Re-usable pottery cups

Feasible on fixed workplaces

Unpracticable for “mobile”
workers & students

Environmental impact strongly
influenced by cleaning



Feasibility introduction bio-cups

Bio-plastic cups:

- Feasible in all coffee machines
- Do not yet exist for hot liquids
- Technological development goes fast

Bio-paper cups:

- Disrupt coffee machines with automatic cup supply
- Feasible in other coffee machines

Environmental performance of alternatives

Production

Distribution, use
& disposal

No waste separation
Source separation
After separation

Waste processing

Combustion (+ energy)
Recycling
Digesting
Composting



Comparative environmental assessment

Life cycle assessment:

- From cradle-to-grave
- Broad range of environmental impacts

Comparing system alternatives:

- Cups of different materials
- Source or after-collection separation
- Waste processing options
- Other aspects where relevant

Biodegradability research

Biodegrading properties “bio-plastic”:

- Well in industrial facility
- Unclear for semi-industrial composting
- Moderately for “garden-heap” composting

Evaluation industrial digestion bio-plastics

Optimisation study semi-industrial composting:

- Own facility Wageningen UR
- For own lopping & harvesting waste
- Research bio-plastic & bio-paper cups



Are the alternatives sustainable ?

Environmental performance is constraint by:

- Price:
 - For consumers
 - For Wageningen UR

- Willingness to separate:
 - For consumers
 - For cleaners



Implementation studies

Focus on cleaners, students & staff

- Age, nationality, income, knowledge & interest
- Fixed workplace ↔ moving between

Survey willingness to cooperate & separate

Inventory preferences waste separation systems

Cost assessment & balancing with environment

Pilot introduction of bio-cups to Wageningen UR



Can we help our planet ?

Results sustainability research bio-cups:

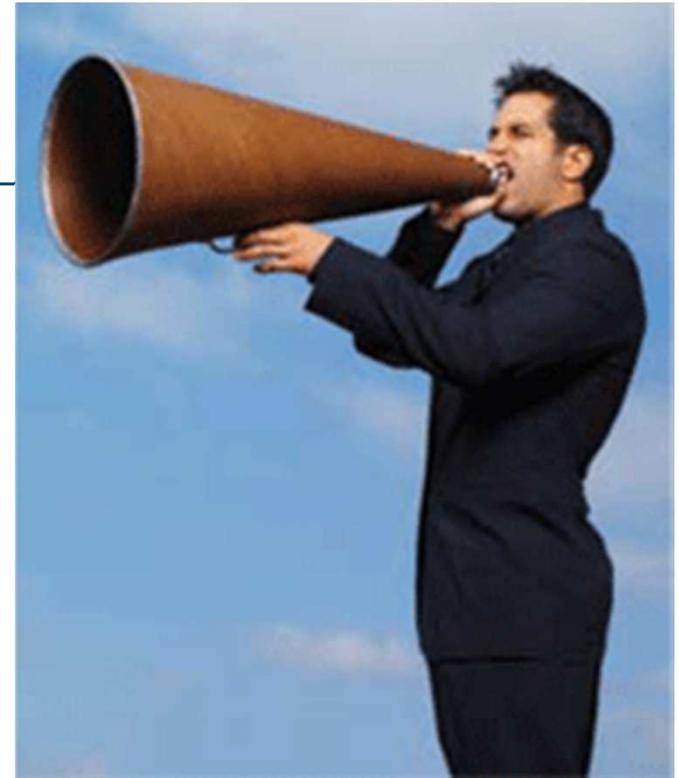
- Decision-support best system for Wageningen UR
- Stimulate other organisations to follow

Importance of bio-cups for Wageningen UR:

- Build sustainable behaviour staff & students
- Example to province, Netherlands, internationally
- Stimulate other organisations to follow



Communication activities



Informing:

- Wageningen UR community
- The province, Netherlands & world

“Translating”:

- Thorough research reports into digestible text
- Facilitating other organisations to shift to bio-cups

Sustainability of biocups-team

Annet de Haas
(FS; commisioner)

&

José Potting
(ESA; project leader)

&

Annemarie de Vries
(FS; project secretariat)

Environmental assessment:

Eugenie v.d. Harst, Edis Glogic, José Potting, (all ESA)

Biodegradability research:

**Harmen Riphagen & Egbert Lantinga (LBL), Maarten v.d. (AFS)
Jouke Dijkstra & Grietje Zeeman (ETE)**

Implementation studies:

**Karen Heuvelmans & Lia Ploum, Carja Butijn (all SCH)
Kimberly Farzan & Rianne Bosman, Carja Butijn (all SCH)
Bow Tingpovong & Onno Omta (MS), Carja Butijn (SCH)**

Communication:

**Carlotte Cruisen (ESG)
Cor Meurs (FS)**

Think Thank: Gerard Taat, Willem ter Voert, Jeroen Sluijsmans (province of Gelderland), Taco Reindertsen (SaraLee), Robert Middelkoop (Hutamaki), Henk Voormolen (Albron), Robert Bos (RBI), Christiaan Bolck (ASF)

Lets have a drink

and look at the posters !

© Wageningen UR



WAGENINGEN UR
For quality of life