

# Experiences and Possible Improvements of GHG Accounting – Examples from the City of Stockholm and a Project with the WWF



Stefan Johansson, Nils Brandt, Getachew Assefa

Department of Industrial Ecology,  
Royal Institute of Technology,  
Stockholm, Sweden

# The City of Stockholm's Climate Investment Program



- National program, started 2004
- Funded by the Swedish EPA
- Stimulates projects within the areas of:
  - Energy
  - Information
  - Traffic
- Multiple projects are combined into "Programs"
- Is in its original form very much based on traditional GHG accounting and "end-of-pipe" measurements

# A typical project



- Switch X gasoline cars to ethanol ones
- Project outcome per car:

Type of Car	l/10 km	g CO2e/l	g CO2e/10 km
Gasoline	0,92	2166	1993
Ethanol	1,29	342	440

# Improving the accounting – Adding a fuel LCA perspective



- Switch X gasoline cars to ethanol or biogas ones
- **Add LCA emissions from production of fuel**
- Project outcome per car:

		Direct CO2	LCA addition	Total
Type of Car	l/10 km	g CO2e/l	g CO2e/l	g CO2e/10 km
Gasoline	0,92	2166	224	2199
Ethanol	1,29	342	383	934

# Further Improvement – Adding a Life Cycle Service Perspective



- Switch X gasoline cars to ethanol or biogas ones
- Add emissions from production of fuel
- **Add emissions from the needed infrastructure**
- Project outcome per car:

	Direct & LCA	LCS addition	Total
Type of Car	g CO2e/10 km	g CO2/10 km	g CO2e/10 km
Gasoline	2199	290	2489
Ethanol	934	290	1224

# Summary



- Just measuring end-of-pipe emissions can be misleading
- LCA Data is required
- Can help from a strategic and planning perspective