



Supporting Communities to Reduce their Carbon Intensity

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Nenagh.

[click](#)



Background



Developed an EF method for Irish communities. Measured 88 community EFs. Worked with a single Tipperary community for 5 years.

Worked with over 54 communities in Tipperary Energy Agency supporting their conservation of energy.

<http://www.energyneighbourhoods.eu>

<http://www.energyxchange.eu/en/index.php>

<http://ie.theclimatecup.eu/>

<http://servecommunity.ie/>

Research Outline

1. Develop a measurement tool; resource/emissions.
2. Incorporate a secondary analysis; behaviour.
3. Carry out measurement each year for four years.
4. After each survey to develop a low carbon action campaign.

Motivate engagement and ownership.

5. Year 5: Final assessment of behavioural change.

Measurement – EF and Behaviour

Needed to assess carbon intensity of domestic lifestyles and behaviour.

Ecological Footprints are a:

- Measure of human consumption.
- Measure of climate change.
- Household scale measurement. Household energy, transport, water, food and waste consumption.
- Communication tool - Tangible construct.
- Bottom-up method and therefore appoint responsibility with the consumer.
- Low Carbon Driver.



Government tokenism?

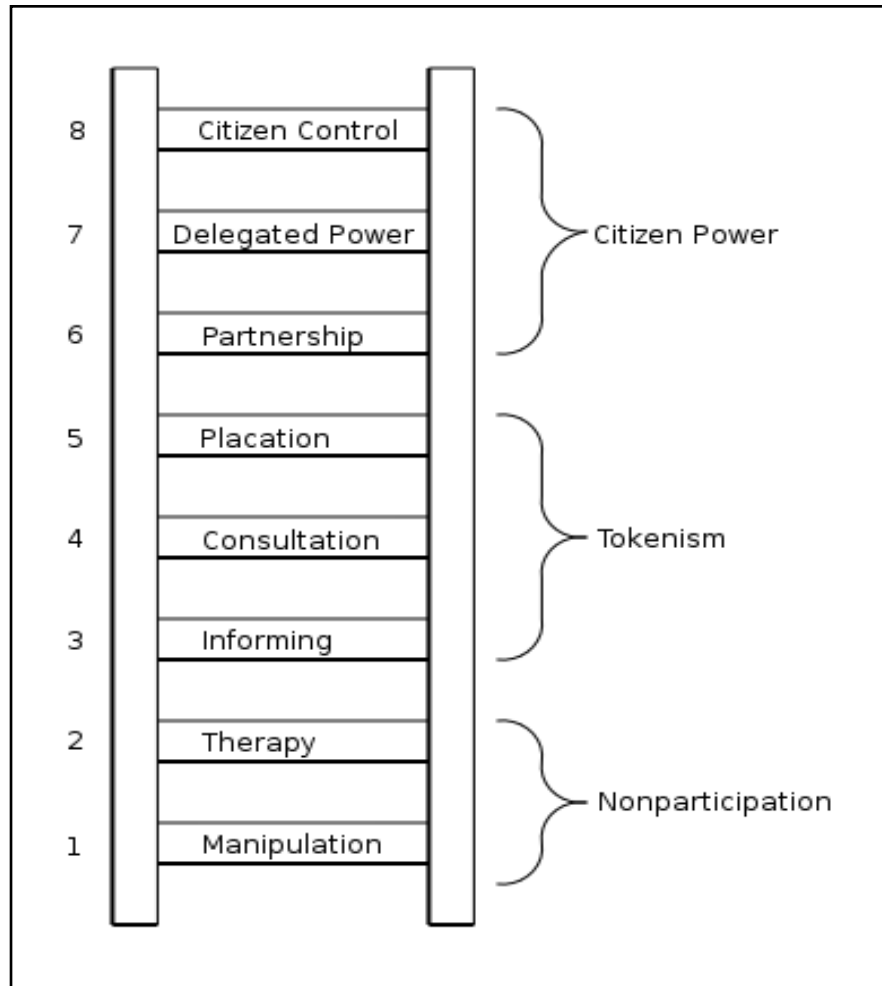
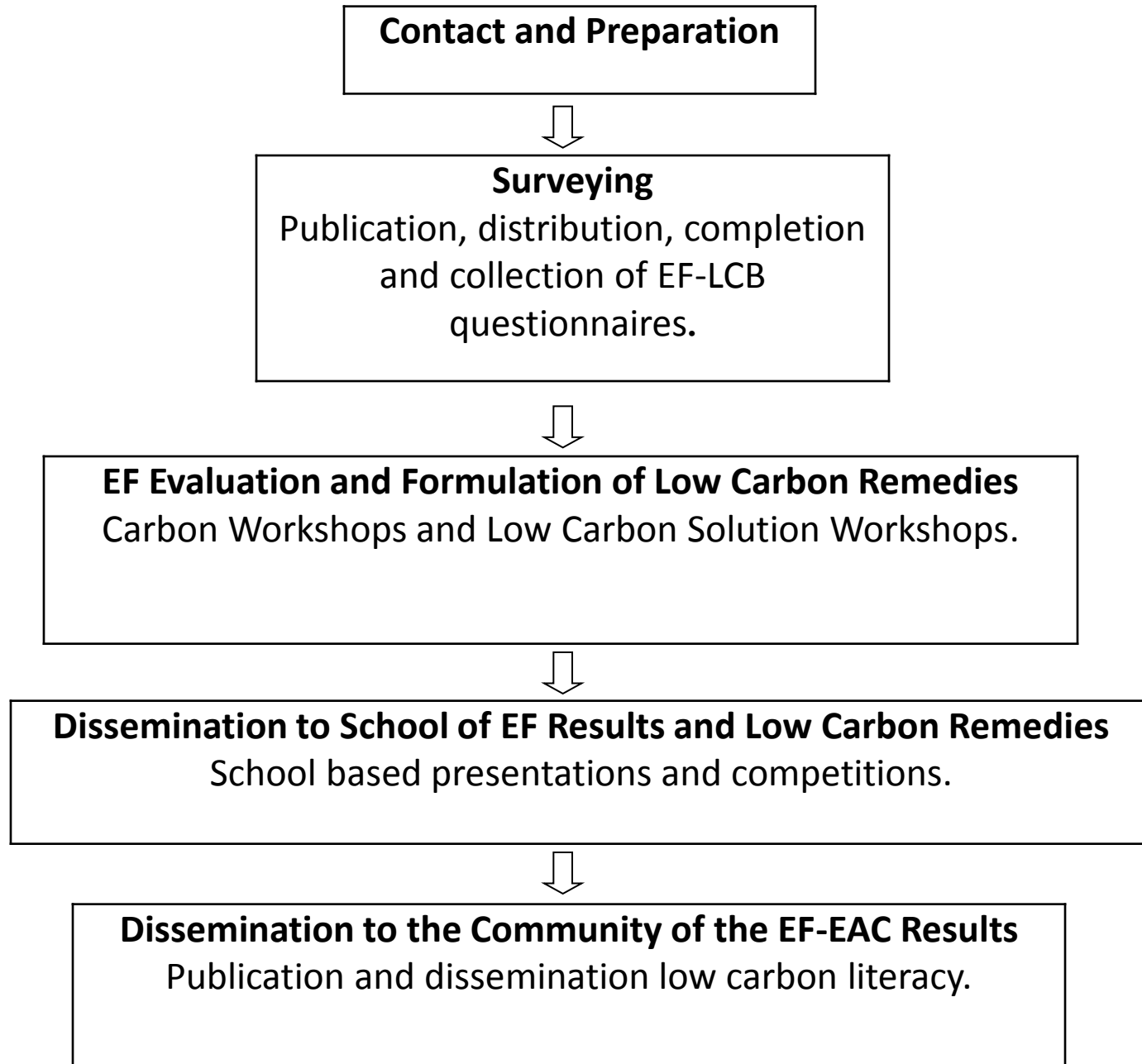
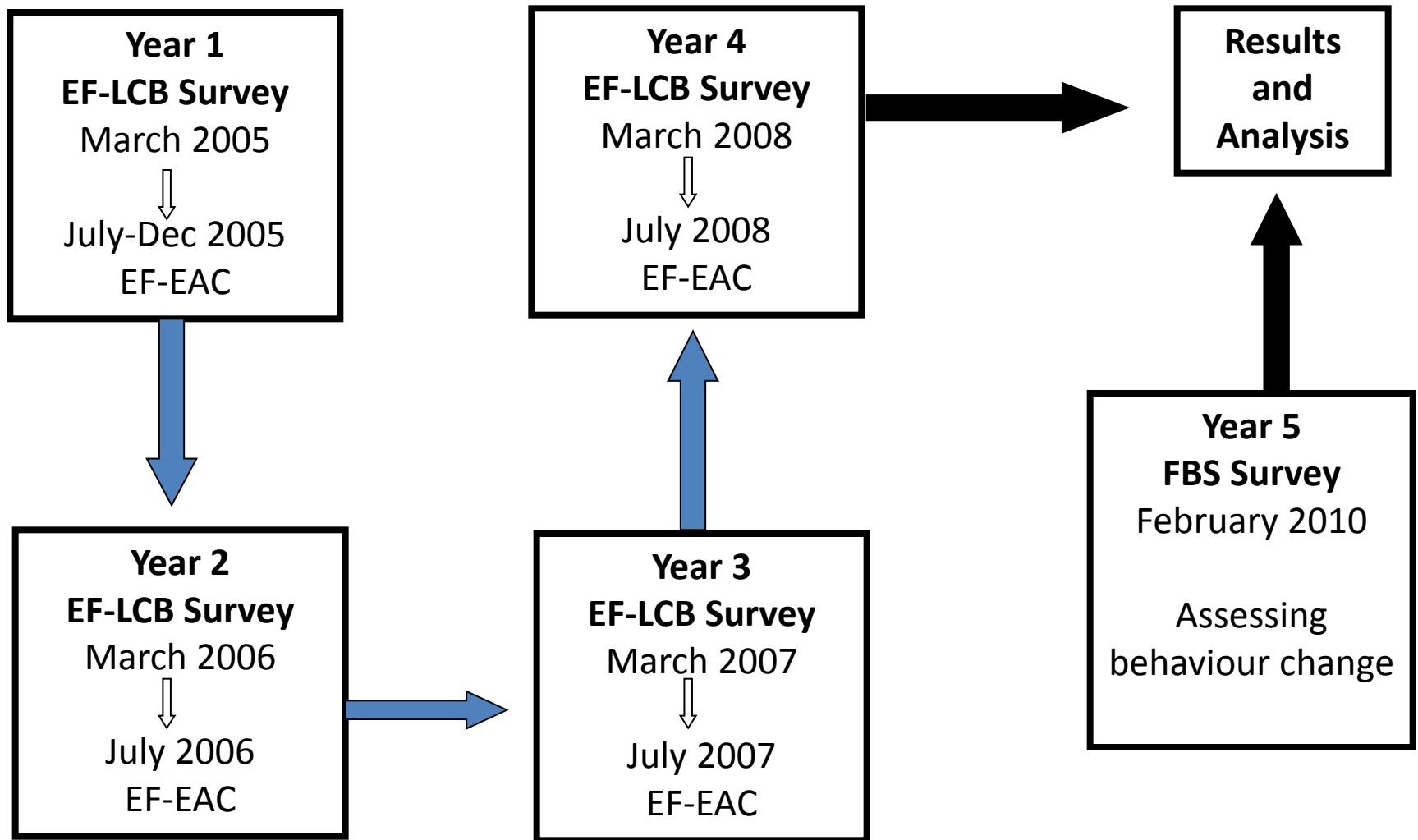


Figure: Citizen participation (Arnstein, 1969)

5 Step Phase Annual Chronology



Five Year Chronology



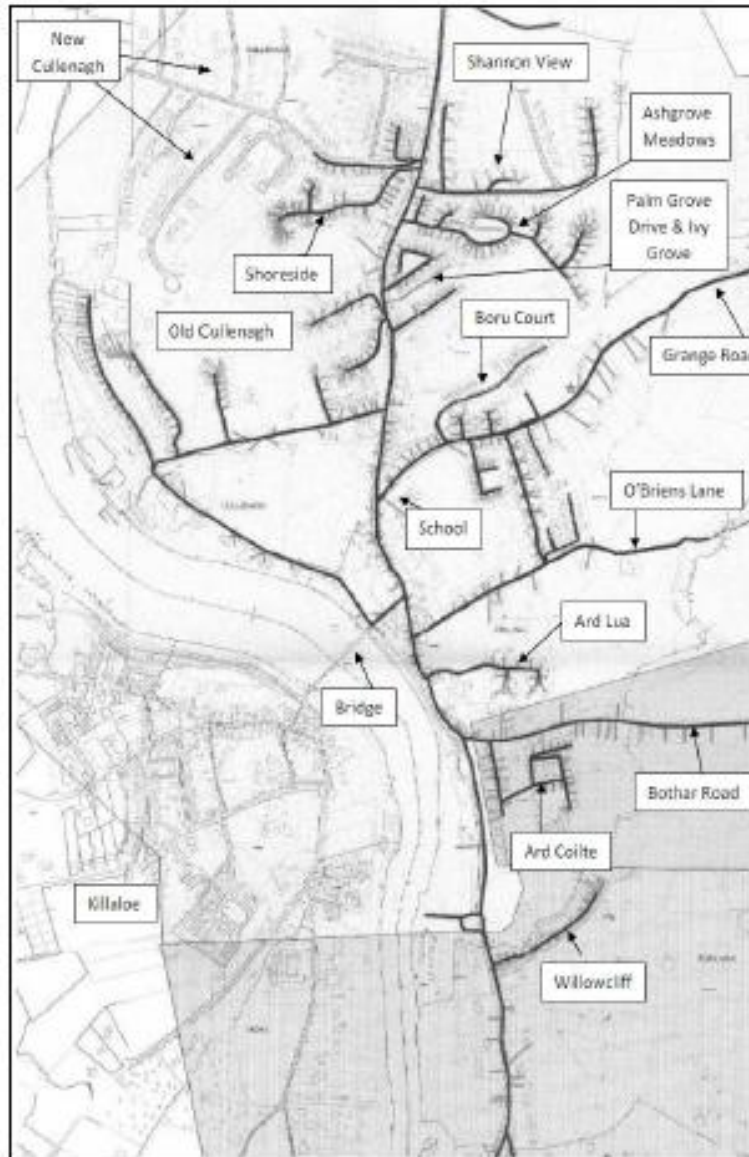
(CSO, 2006)	Ballina Town
Population	1861
Homes	>700



Ballina, Tipperary



Layout Map



700
households
1861
residents

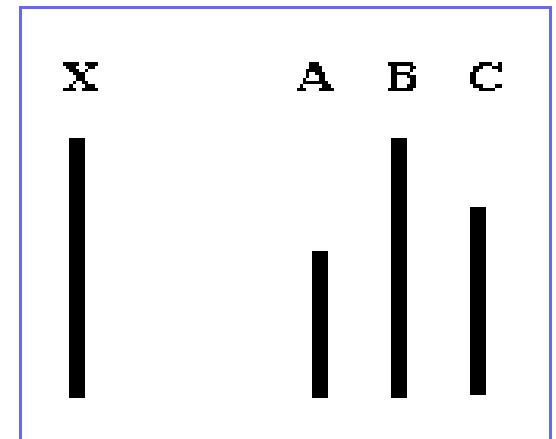
Drivers identification and utilisation is essential

Imagine that you have agreed to participate in an experiment on upon arriving for the study, you are asked to take your place at a table at which five other participants are seated.

And then I ask “which line is the same length as X?”

And you say?

Normative
= group
pressure



Identify and utilise drivers – from action projects

Identified 78 factors: Complex and mutually reinforcing

17 Drivers

1. Indicators and Measurement.
2. Feedback.
3. Social Capital.
4. Participation/Ownership.
5. Normative Considerations.
6. Infrastructure.
7. Information.
8. Effective Communication.
9. Commitment.

13 Actors

1. Religious Groups.
2. Energy/Environmental Champion.
3. Project Manager.
4. Local Authority.
5. Schools.
6. HEI.
7. Non Profit Organisations.

30 Communication Channels

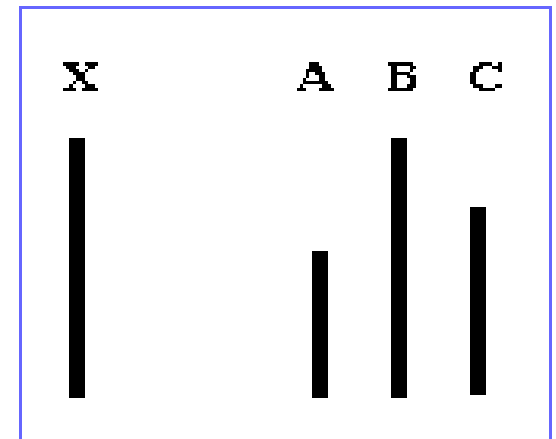
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Imagine that you have agreed to participate in an experiment on upon arriving for the study, you are asked to take your place at a table at which five other participants are seated.

And then I ask “which line is the same length as X?”

And you say? B

Normative



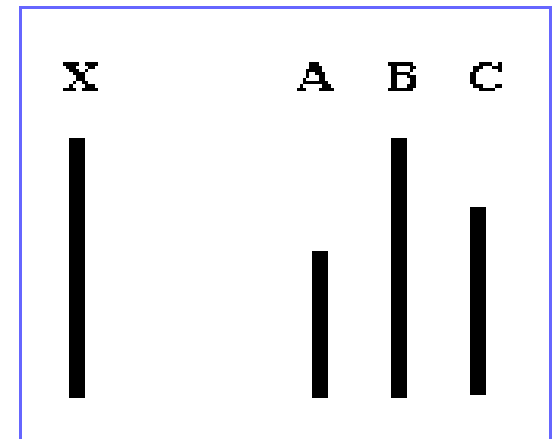
Drivers identification and utilisation is essential

Imagine that you have agreed to participate in an experiment on upon arriving for the study, you are asked to take your place at a table at which five other participants are seated.

And then I ask “which line is the same length as X?”

And you say? B 99% agree

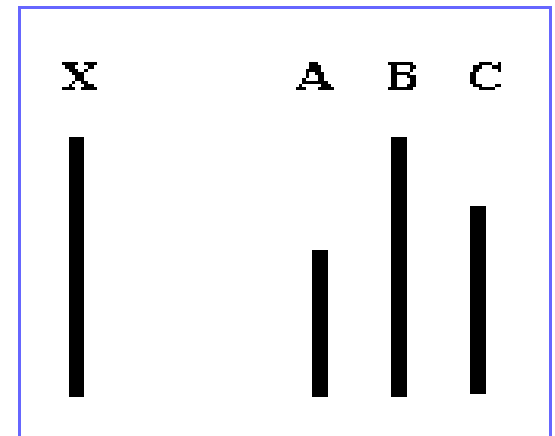
Normative



Normative

Same again but this time one by one the other participants in your group answer C.

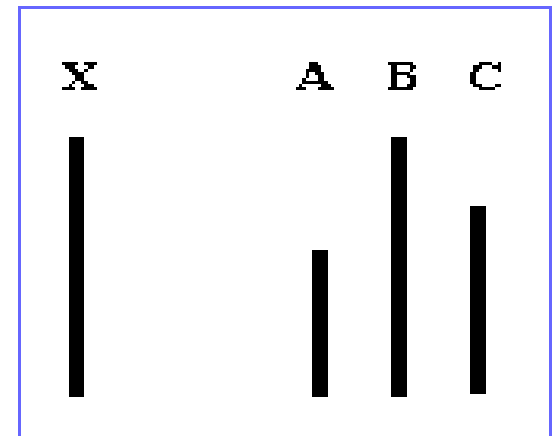
How many of you would say C?



Normative

Same again but this time one by one the other participants in your group answer C.

How many of you would say C? 75%



Normative

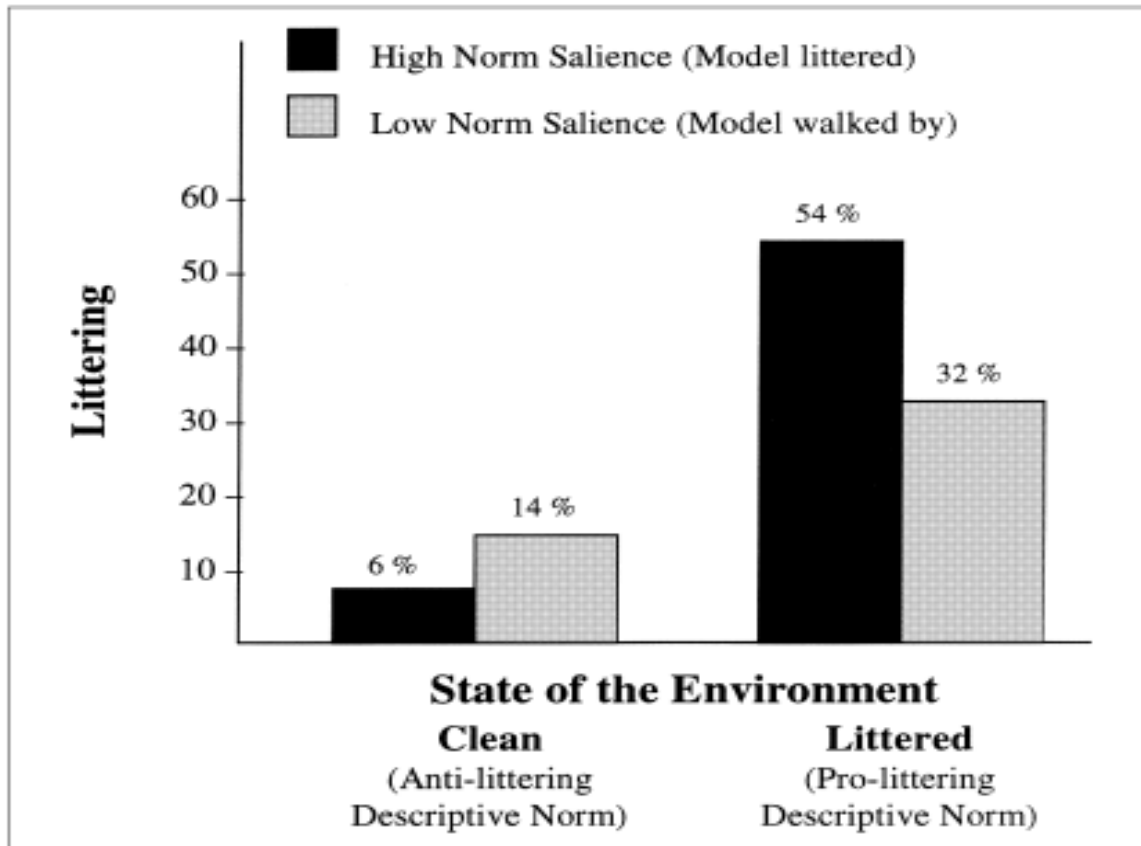
Asch's wrote the fact that “reasonably intelligent and wellmeaning ... people are willing to call white black is a matter of concern”.

If we are to make the transition to a sustainable future, it is critical that we are able to **develop community based projects which support integration of drivers like societal norms.**

Behaviour

Cialdini and his colleagues **placed flyers on every car windshield in a library parking lot.** Subsequently, on return to their cars, the participants were given the opportunity to scatter (the flyer) into either a previously clean, or a fully littered environment, after first witnessing a confederate who either dropped trash into the environment or simply walked and passed by (Cialdini, 2003). As can be seen from the following Figure **there was more littering in the littered environment than in the clean environment and the most littering occurred when participants observed a model drop trash into a littered environment.**

Behaviour



Littering and descriptive norms

Interestingly the least littering occurred when participants saw a model drop trash into a clean environment (Cialdini, 2003).

Behaviour

Signs were placed in hotel rooms which possessed different messages but which all asked the customers to reuse towels if they were staying for more than one night. **A descriptive norm message relays and informs the subject on the choices other people make and how they behave. The descriptive norm message yielded a significantly higher towel reuse rate (44.1%)** than the environmental protection message (35.1%; N=433), which is the industry standard (Goldstein *et al*, 2008). Goldstein evaluated the potency of a variety of descriptive normative messages by placing these messages in hotel bedrooms and examining towel reuse rates.

Summary

- 1) Major benefit to broadcast the behaviour of many in the community. Activate Subjective Norms – visible:
 - Conformity.
 - Case Studies.
 - rewards and competitions.
- 2) Activate Personal Norms through measurement and ascription of responsibility.
- 3) Cater for spill over behaviour.
- 4) Effective Communication.
- 5) Impact PBC and agency; context, barriers, structure.

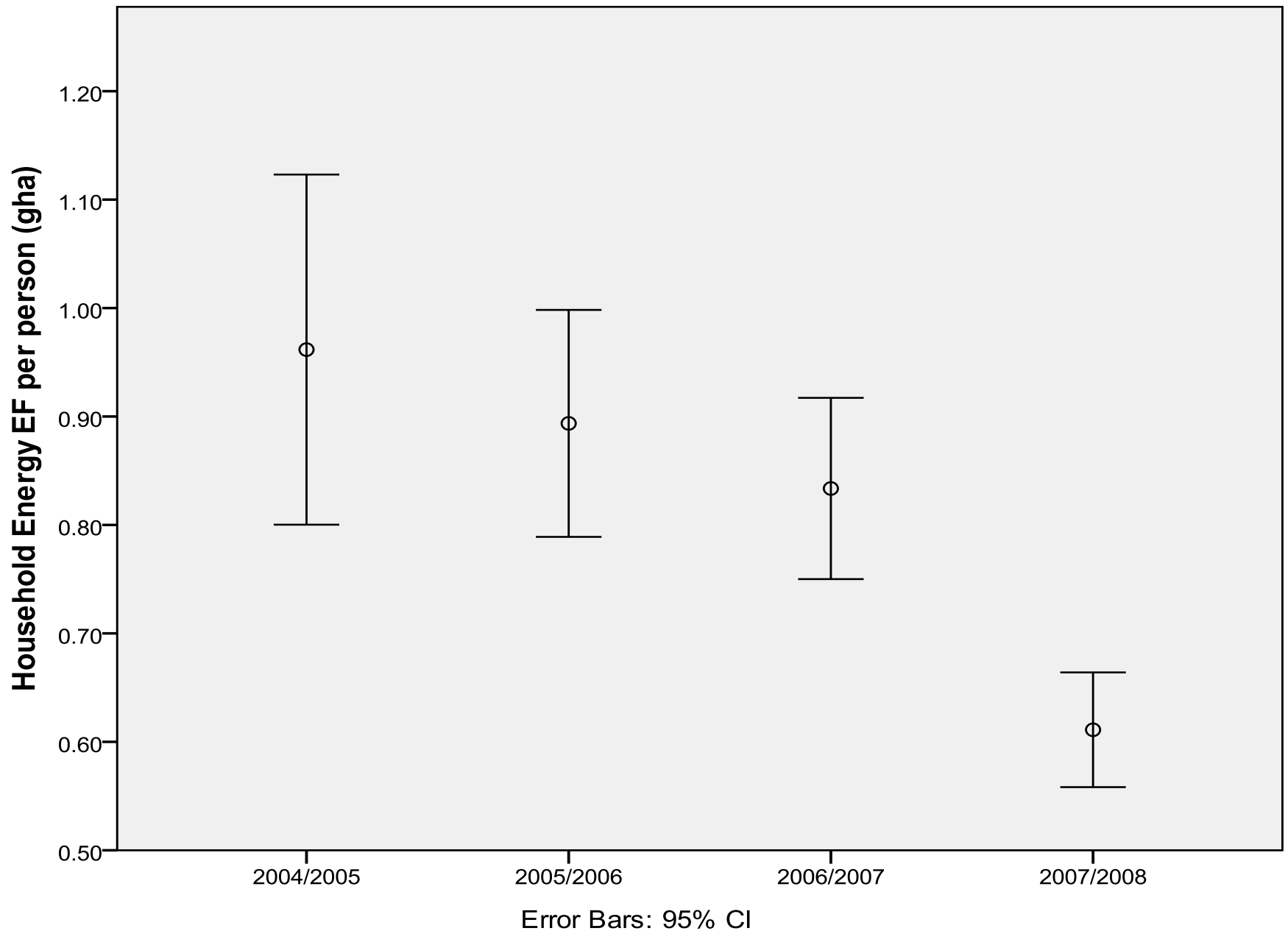
Project LCA



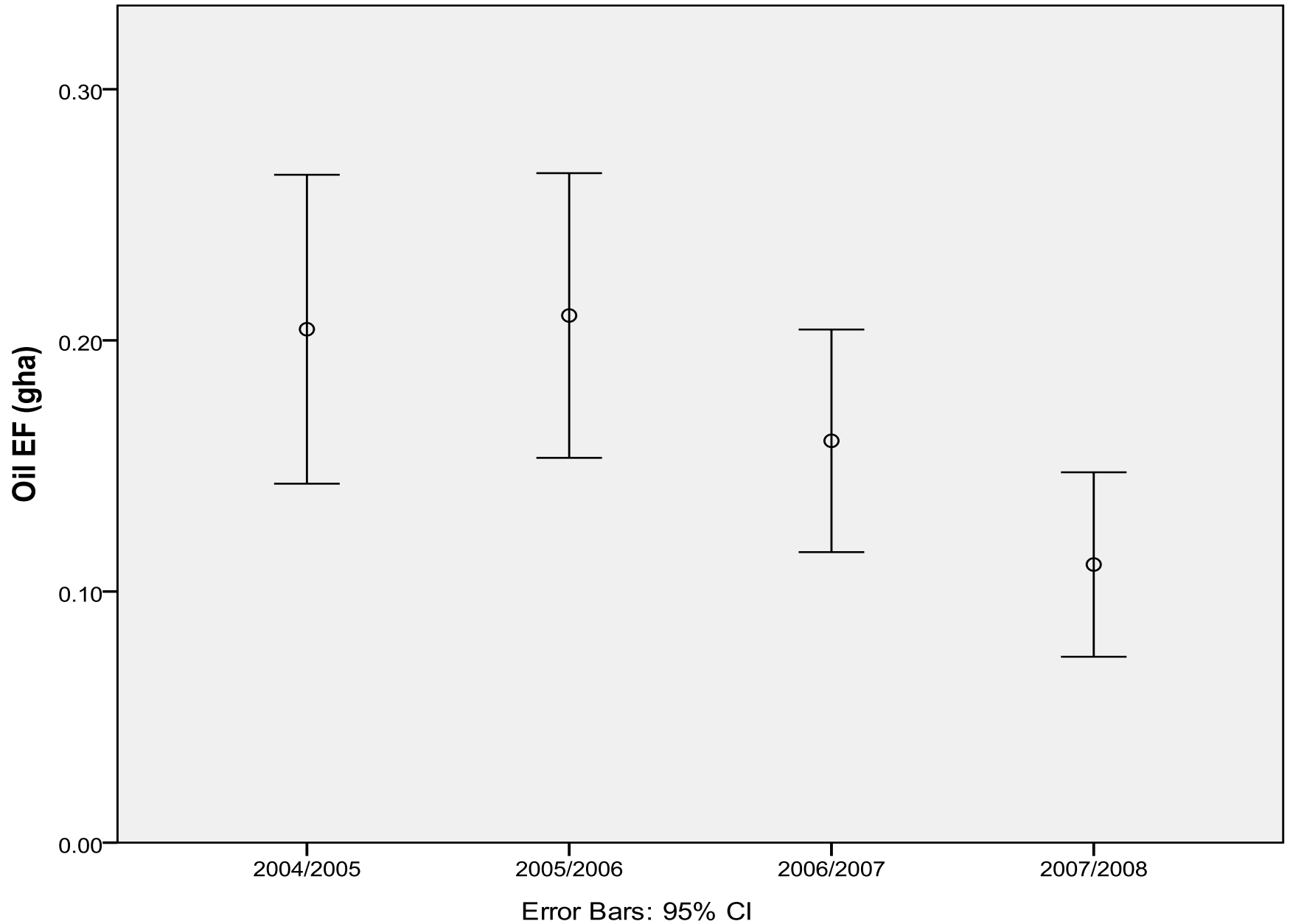
Start up: asked to support this GSC



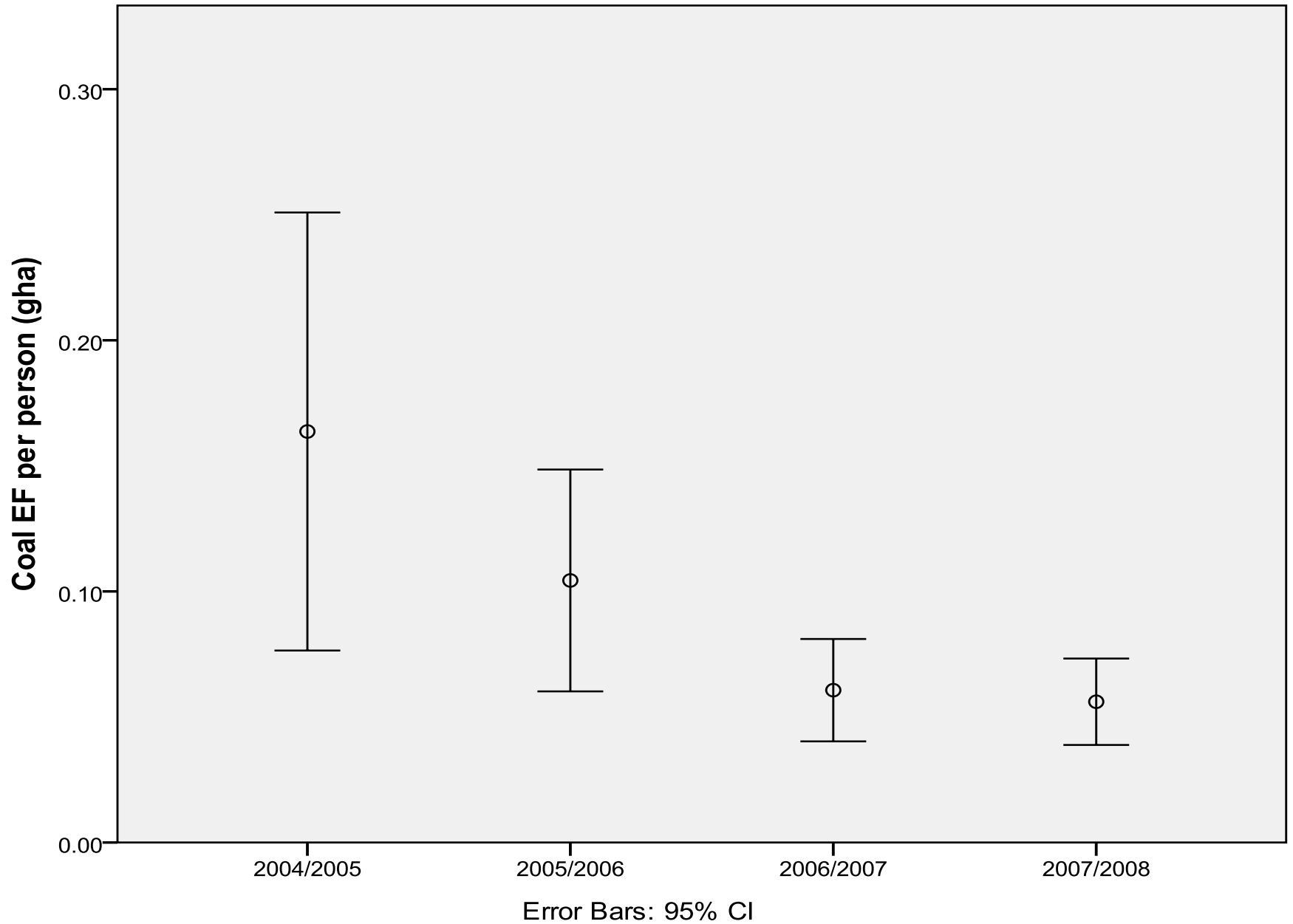
Energy EF Data Over Four Years



EF Data Over Four Years



EF Data Over Four Years

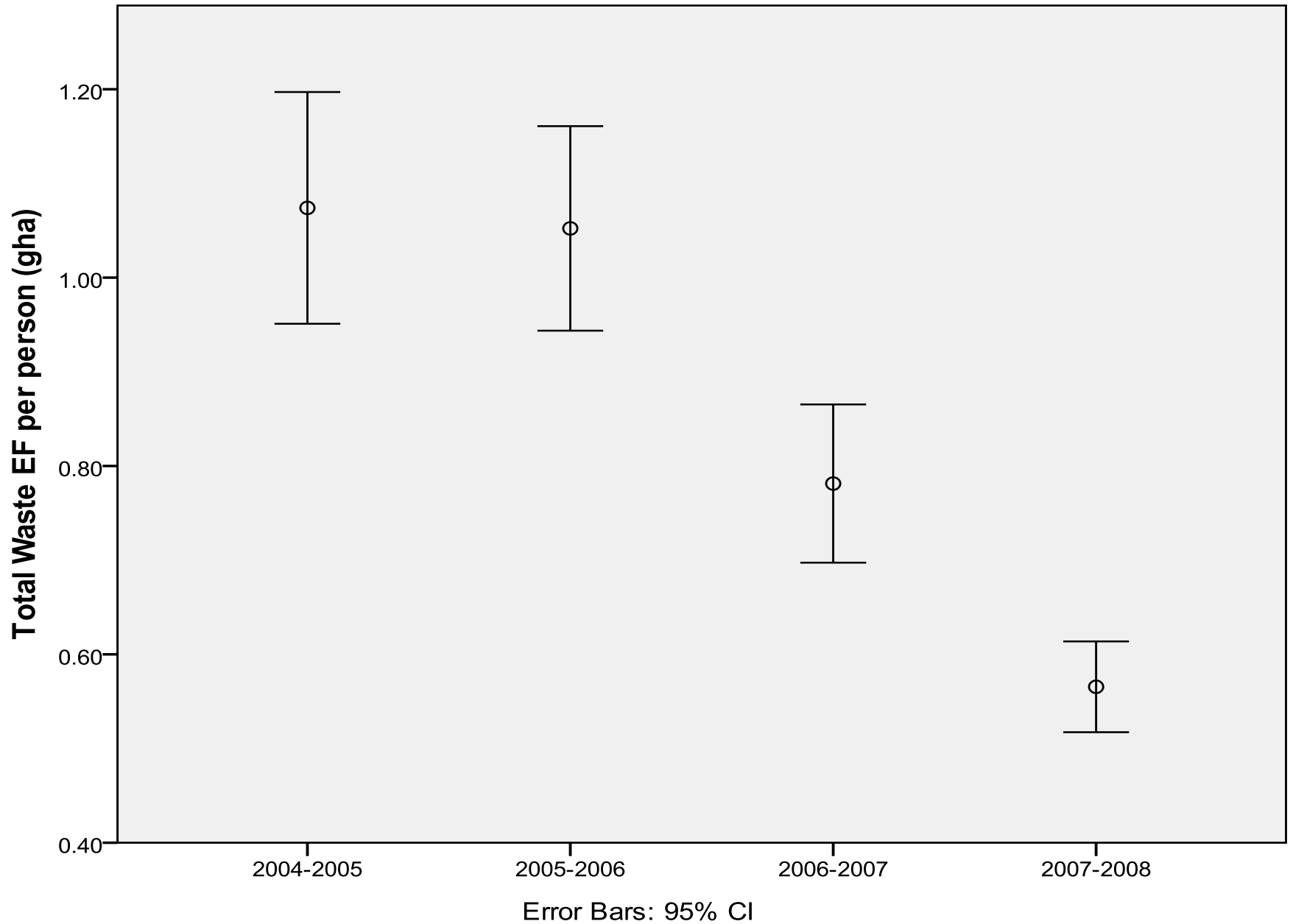


EF Data Over Four Years

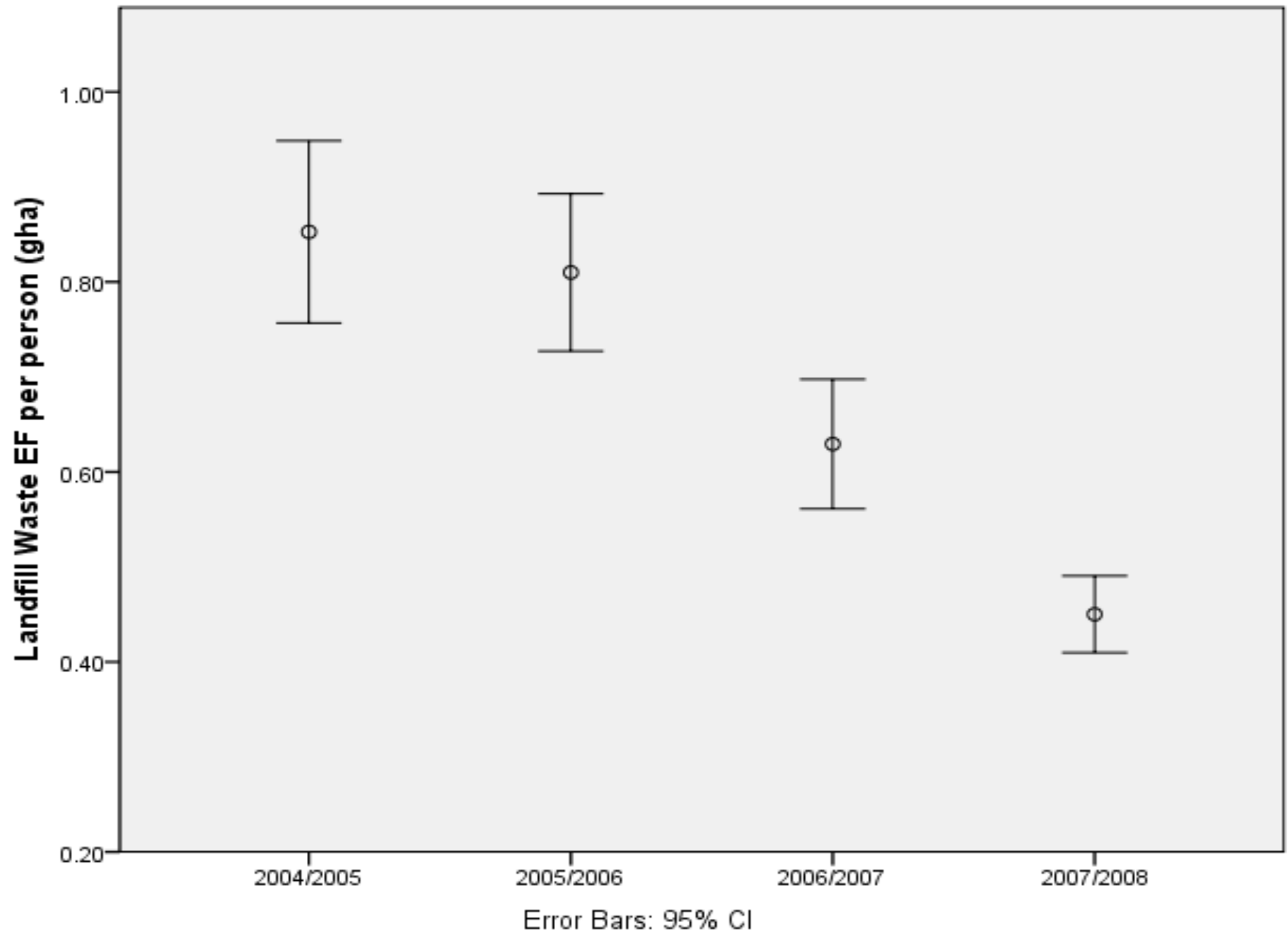
Year	Electric EF	Bottled gas EF	Briquette EF	Wood EF	Peat EF	Piped gas EF
04/05	0.32	0.006	0.05	0.07	0.02	0.14
05/06	0.28	0.002	0.04	0.03	0.01	0.21
06/07	0.33	0.001	0.03	0.02	0.01	0.23
07/08	0.24	0.002	0.02	0.01	0.01	0.16

Values in mean EF (gha per capita)

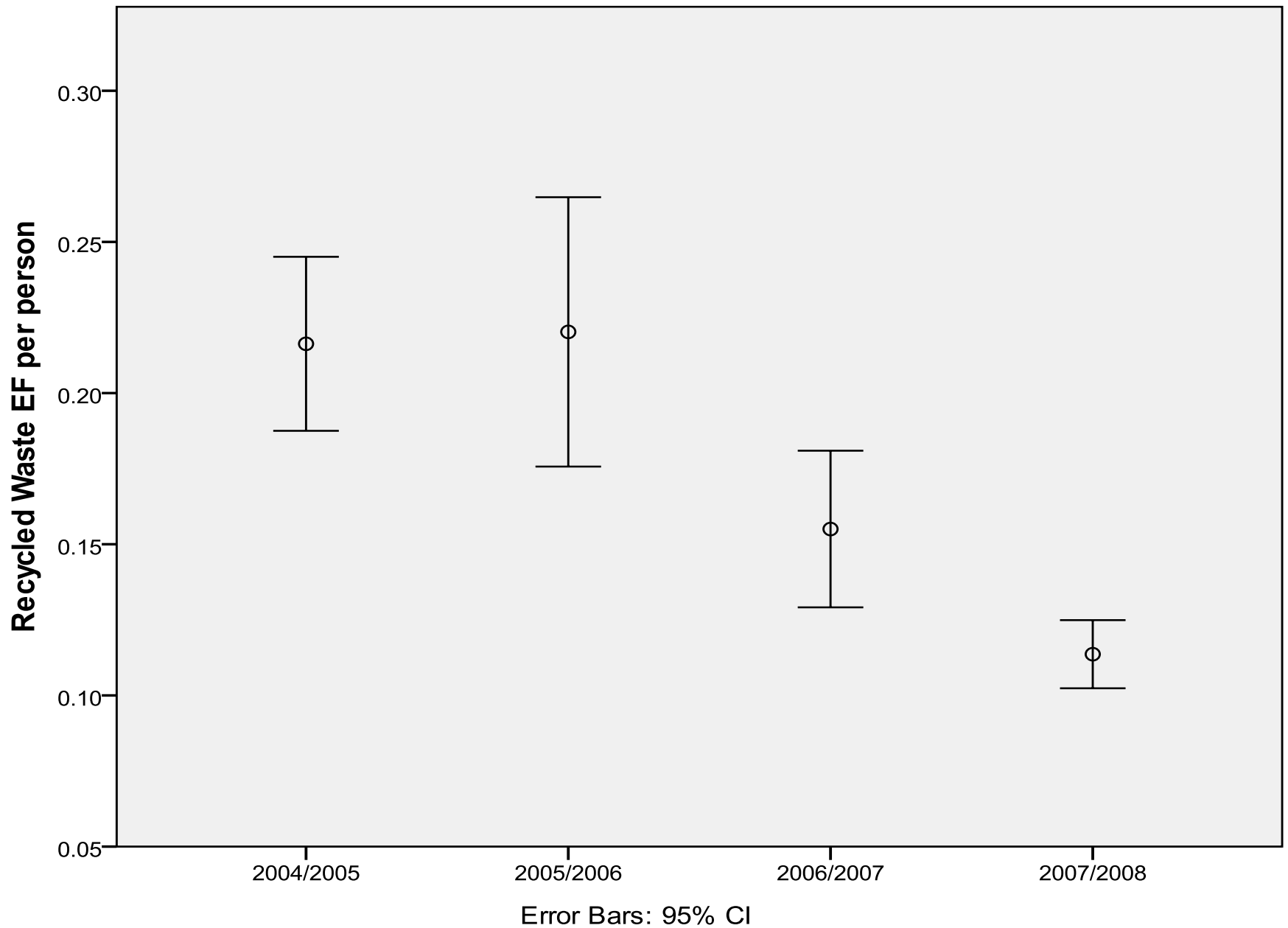
EF Data Over Four Years



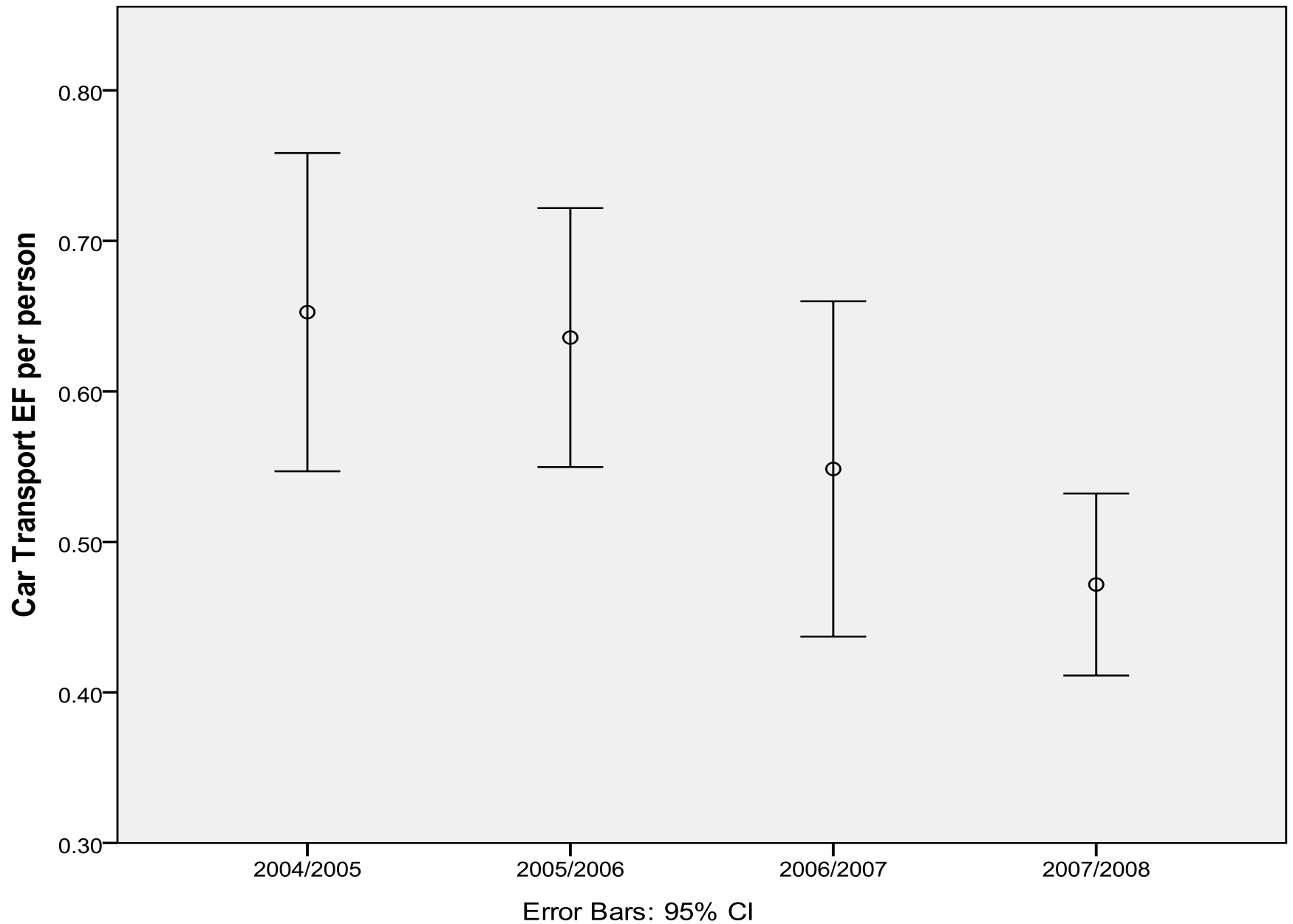
EF Data Over Four Years



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EF Data Over Four Years



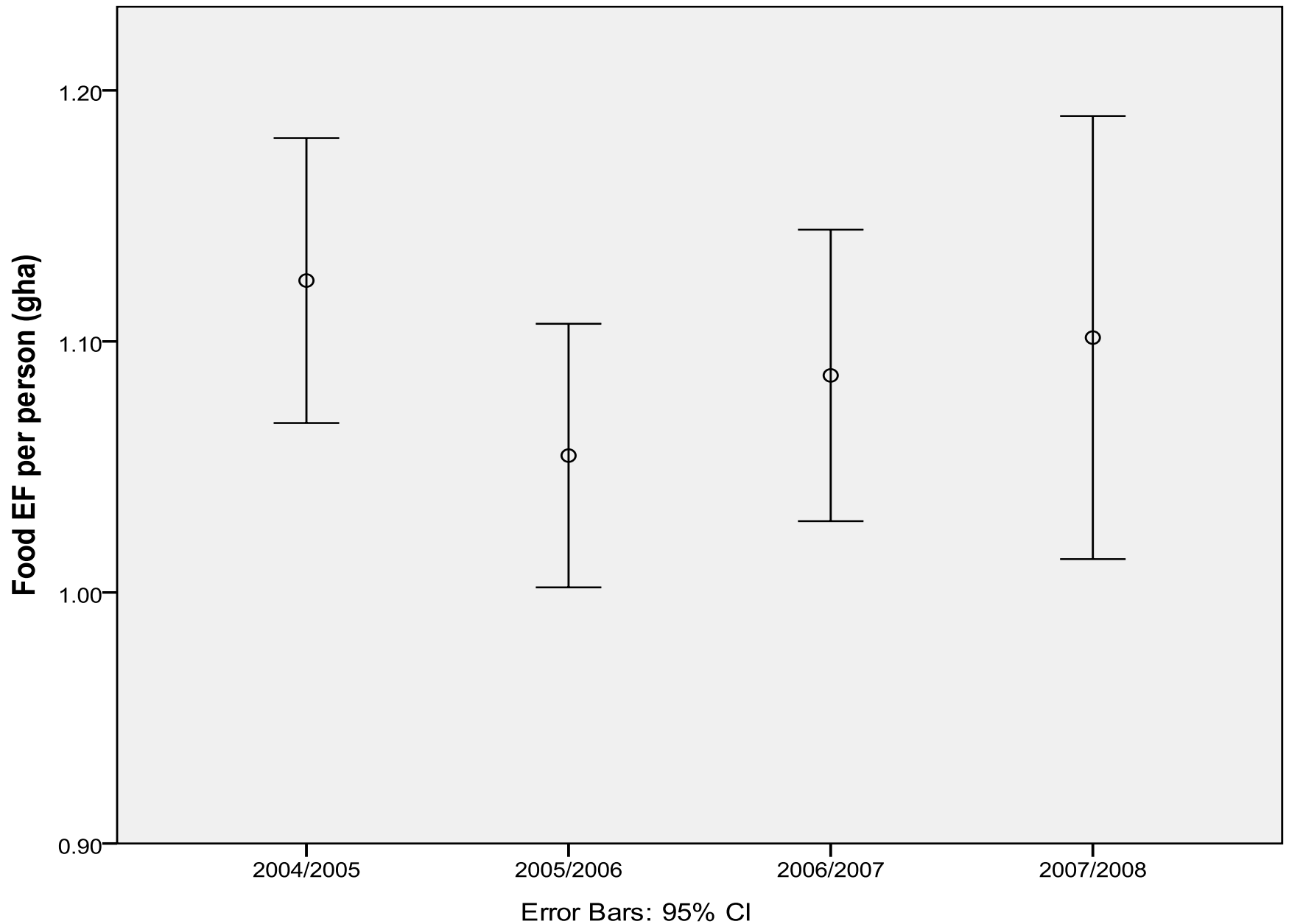
EF Data Over Four Years

Year	Bus EF (gha)	Train EF (gha)	Number of residents	Total EF (gha)
2004/2005	0.26	1.19	8	1.45
2005/2006	0.35	0.70	5	1.06
2006/2007	0.42	2.80	9	3.22
2007/2008	1.17	10.28	16	11.46

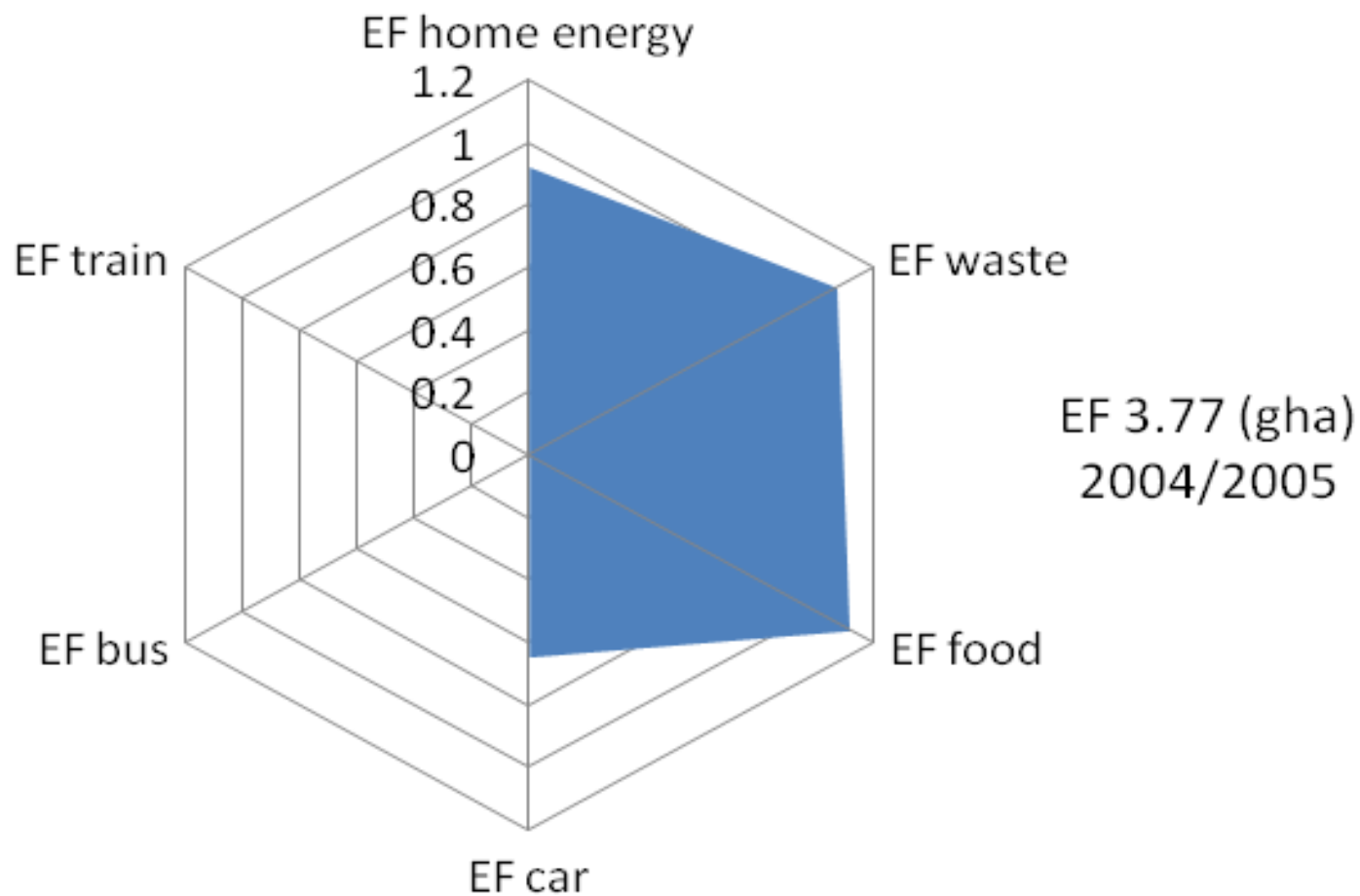
Distance Metrics Over Four Years

Year	Type	Number	Distance (km)	Total Distance (km)
2004/2005	Walk	3	30	55
	Cycle	3	25	
2005/2006	Walk	2	20	35
	Cycle	1	15	
2006/2007	Walk	35	745	959
	Cycle	13	214	
2007/2008	Walk	84	1025	1447
	Cycle	17	422	

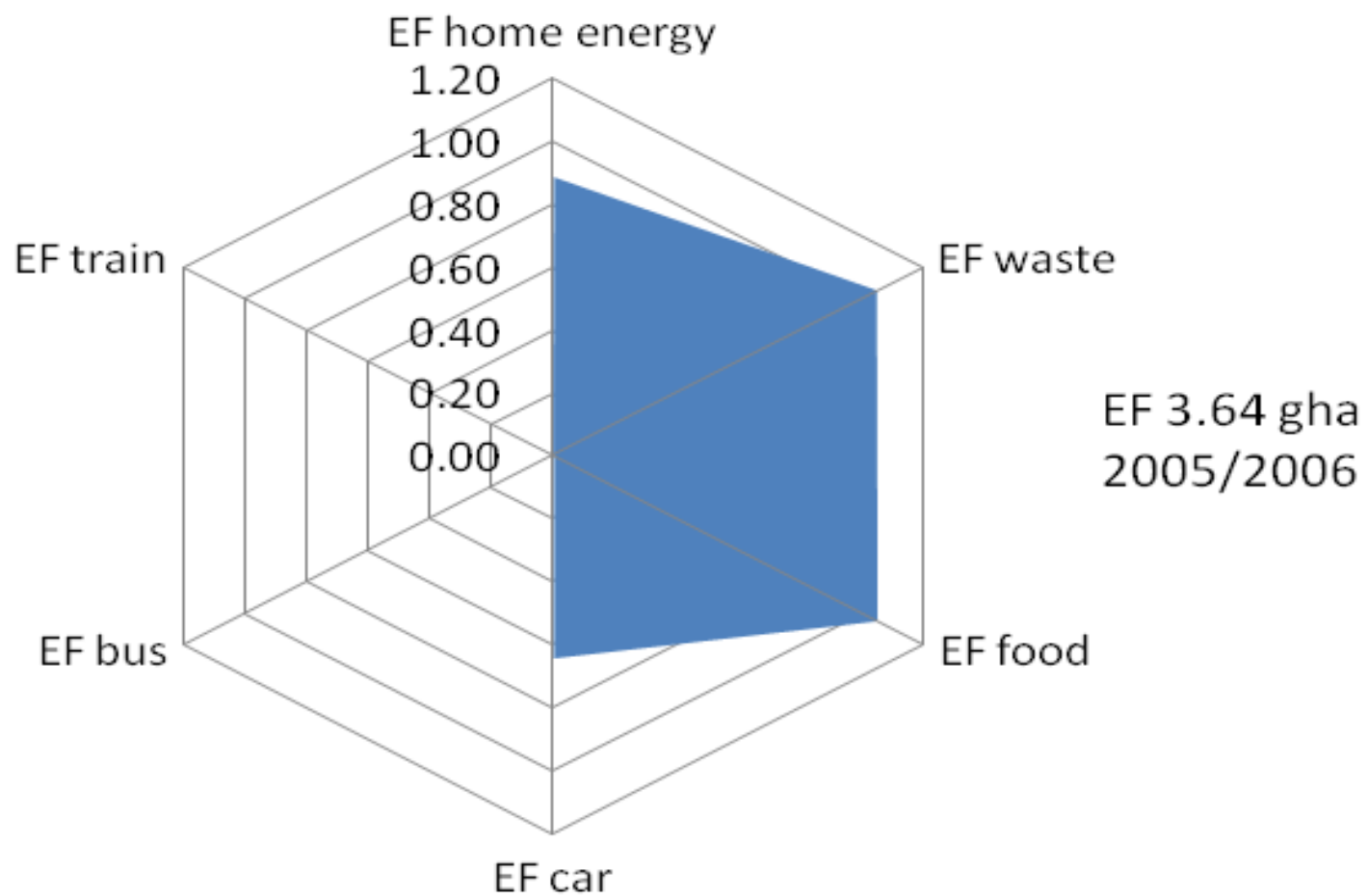
EF Data Over Four Years



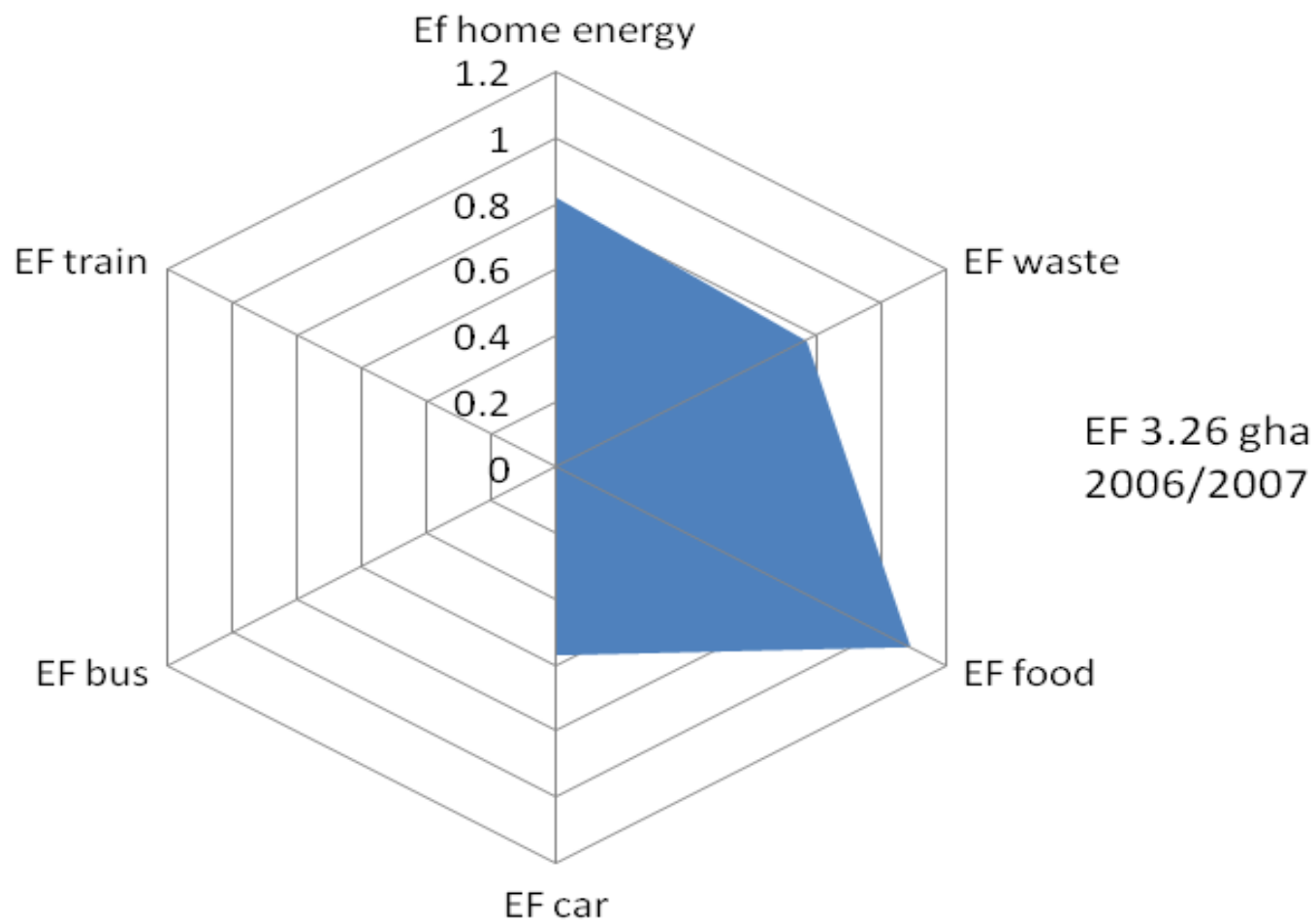
EF Data Year 1

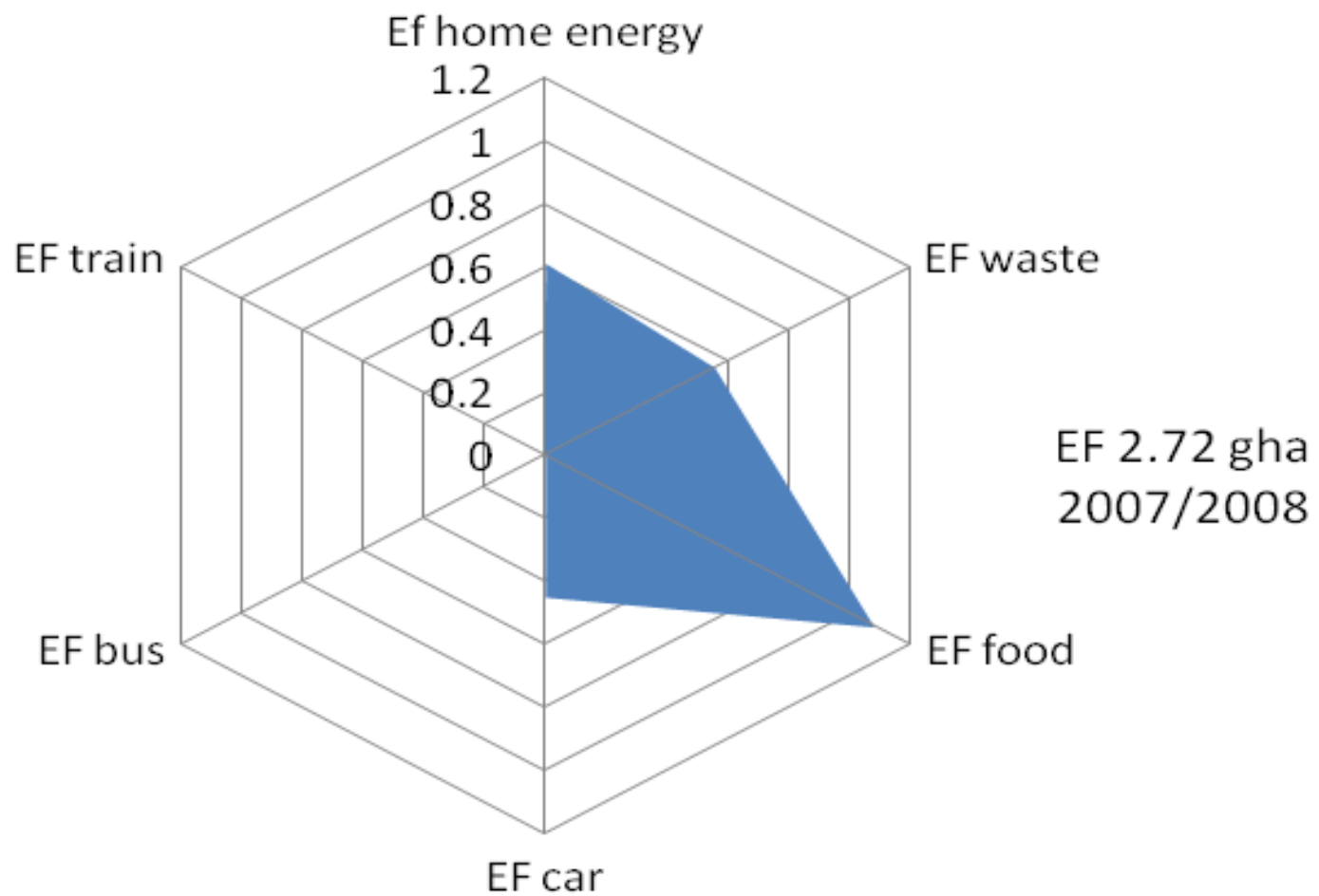


EF Data Year 2

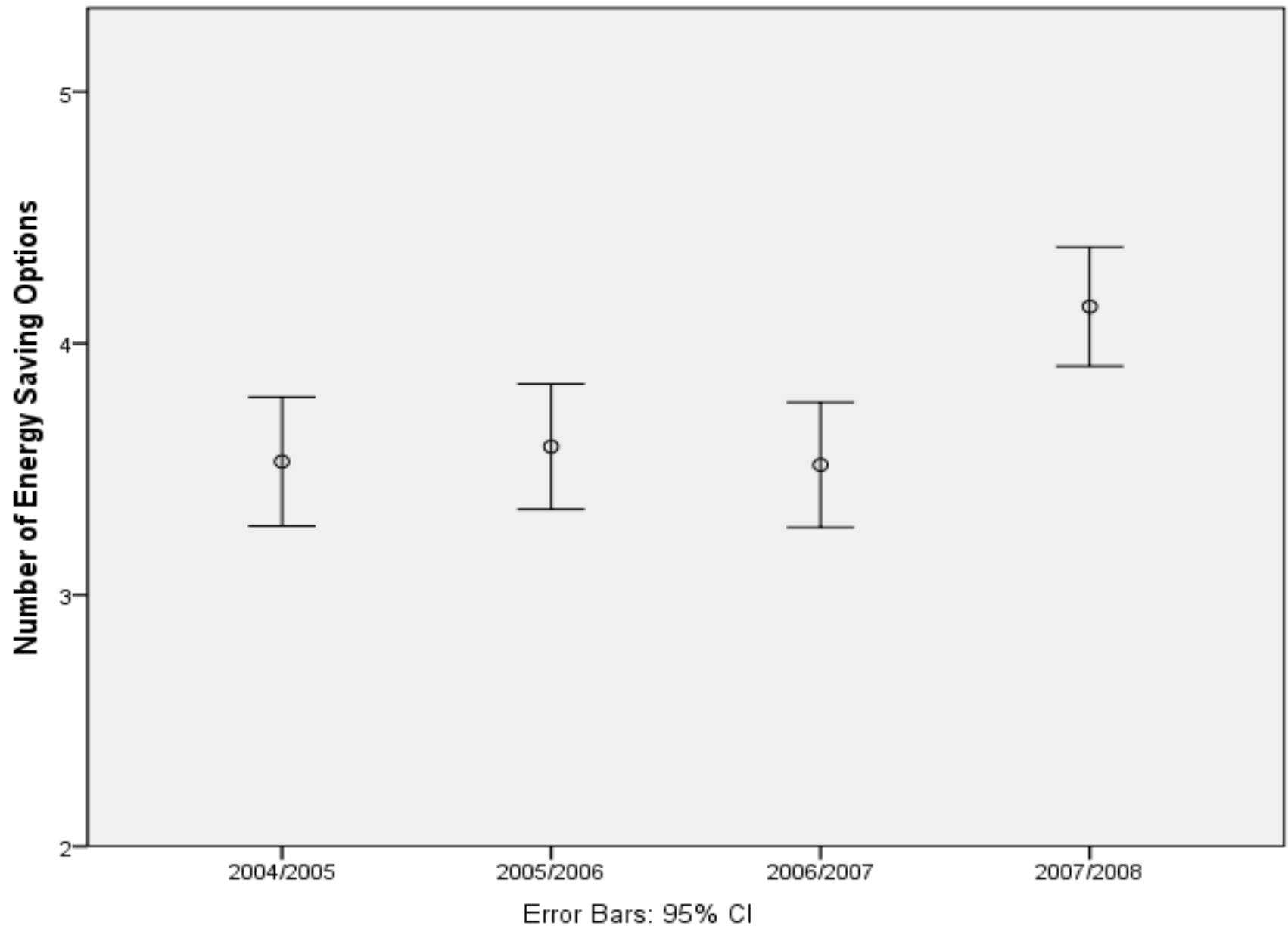


EF Data Year 3

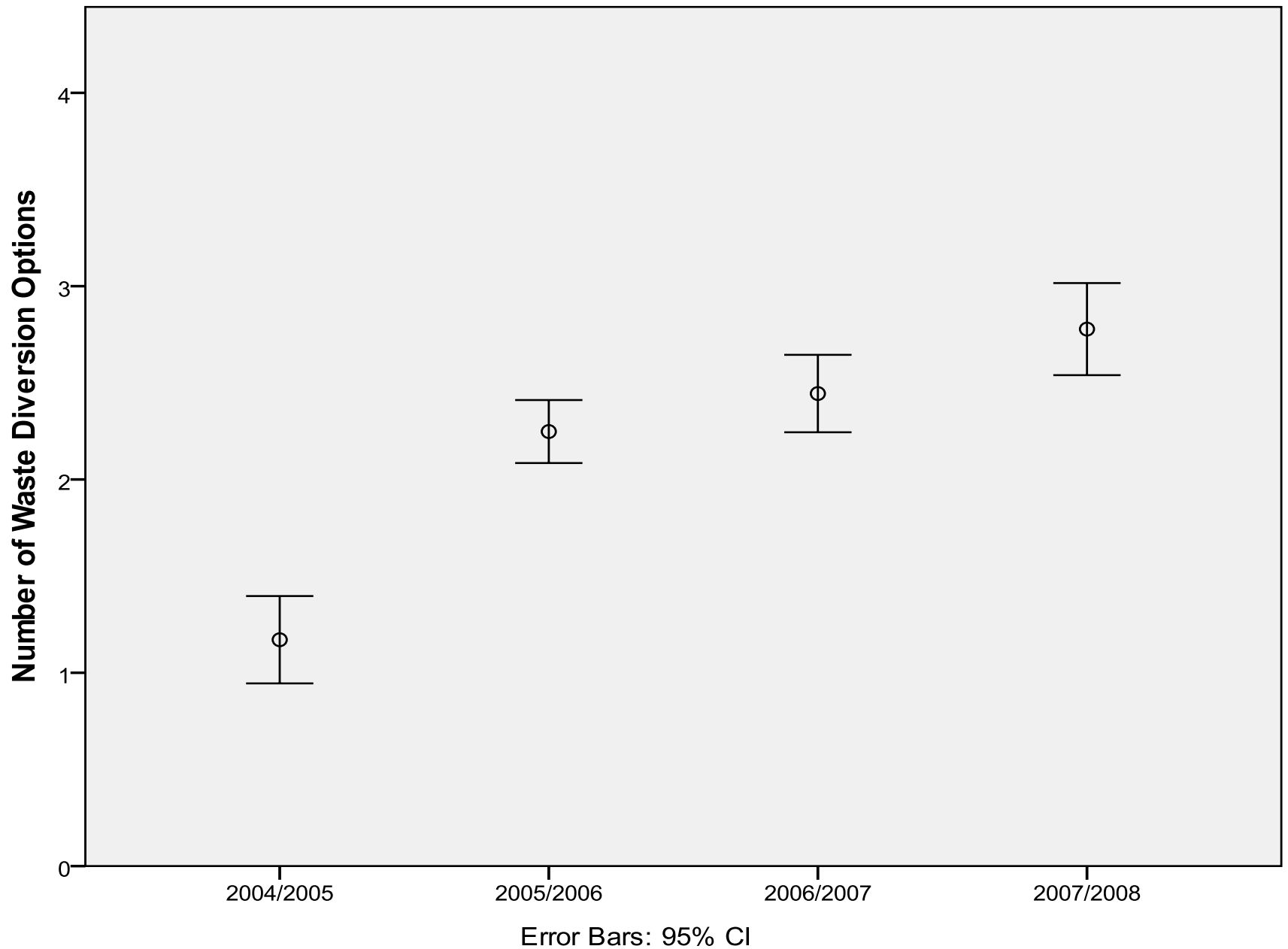




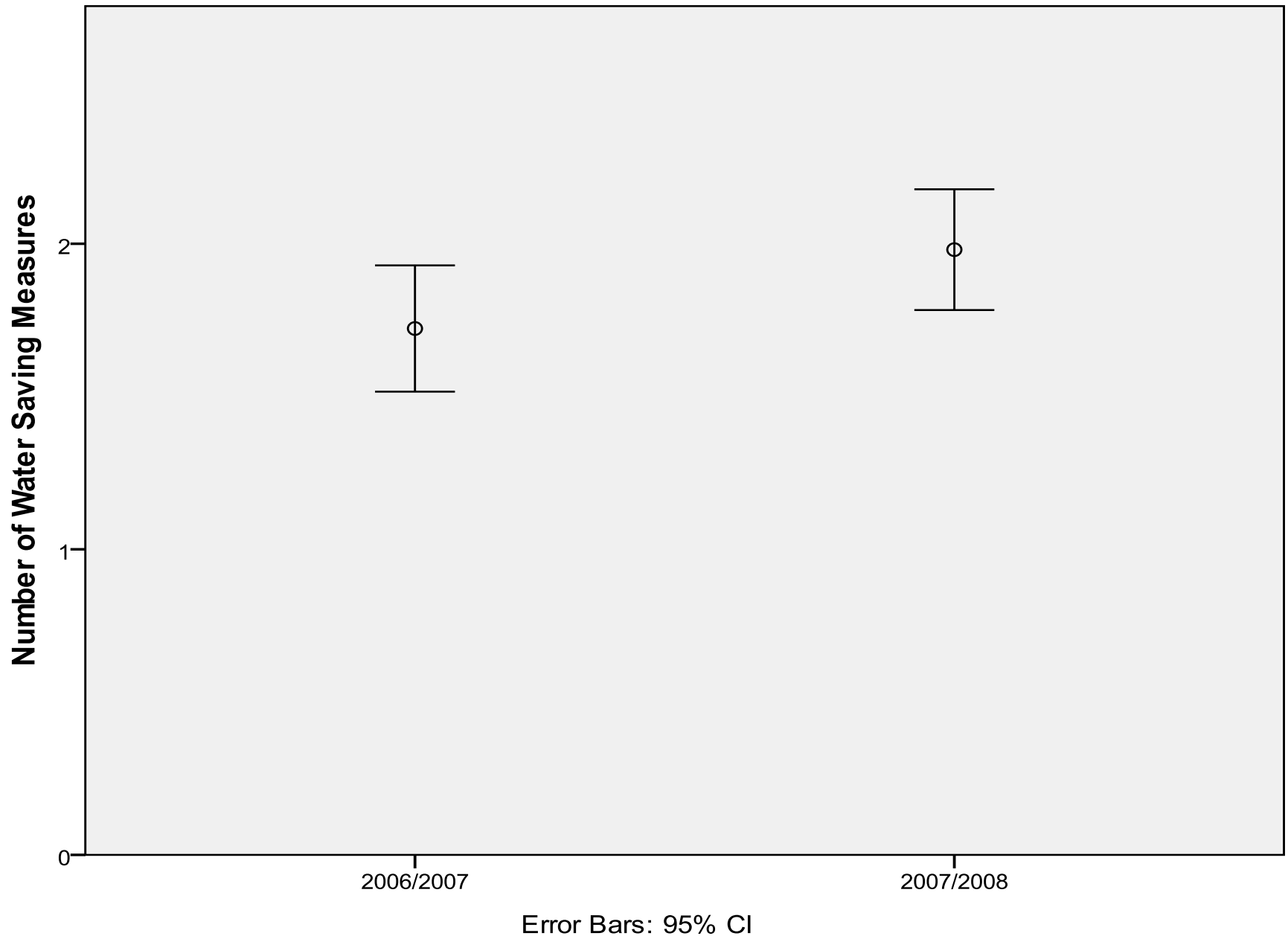
Behaviour Data Over Four Years



Behaviour Data Over Four Years



Behaviour Data Over Four Years



Comparison of Ballina and European Behaviours

Low Carbon Behaviour	EU 27 average%	Ireland %	Sweden %	Ballina (N=191) %
You have purchased a car that consumes less fuel, or is more environmentally friendly	20	14	31	30
You are reducing the use of your car, for example by car-sharing or using your car more efficiently	24	15	38	50
You have chosen an environmentally friendly way of transportation (by foot, bicycle, public transport)	28	24	58	33
You are reducing your consumption of energy at home (for example by turning down heating, not leaving appliances on stand-by, buying energy efficient products such as low-energy light bulbs or appliances	63	61	74	94
You are reducing your consumption of water at home (for example not leaving water running when washing the dishes, etc)	55	43	43	78
Where possible you avoid taking short-haul flights	11	7	35	18

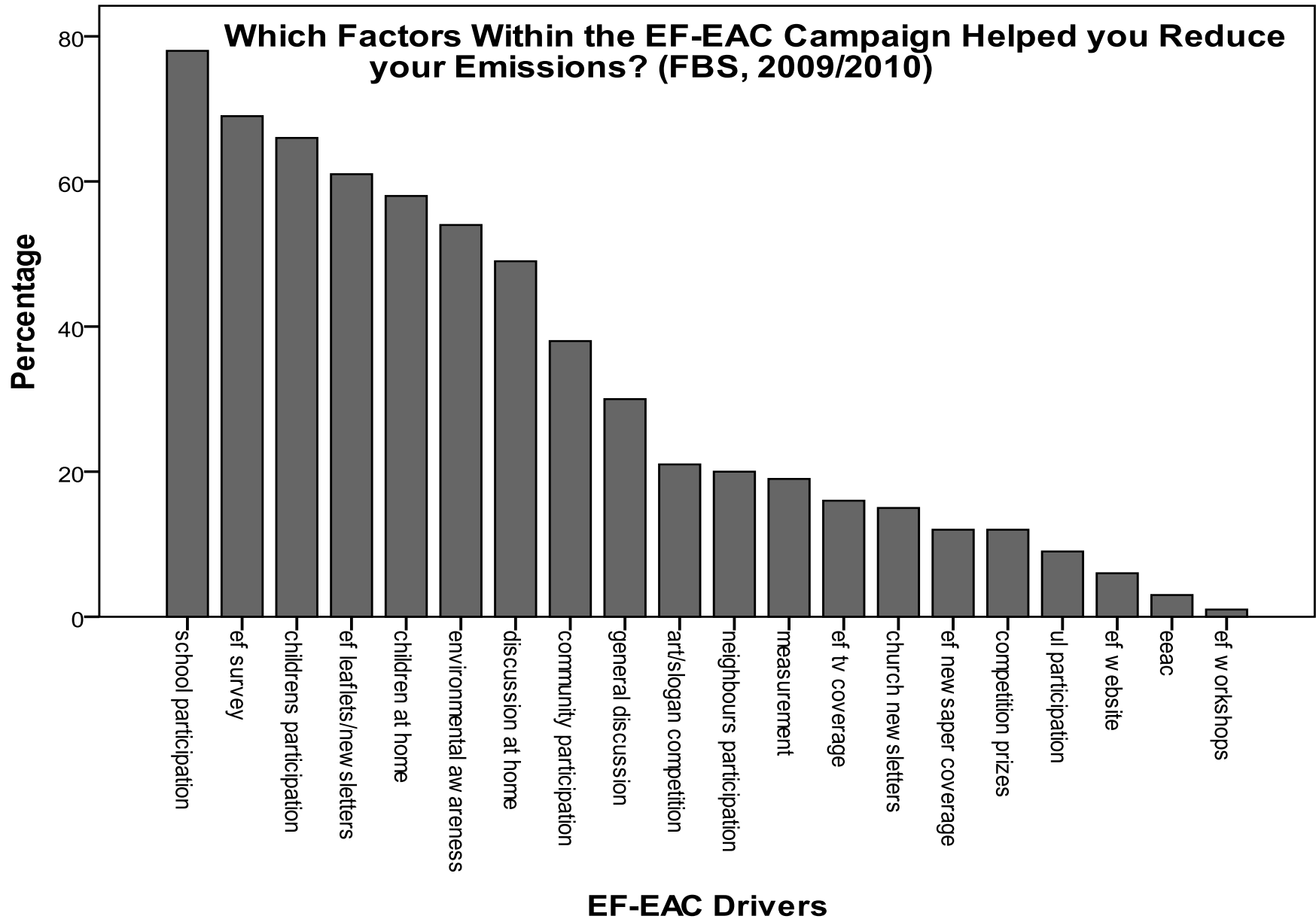
Comparison of Ballina and European Behaviours

Low Carbon Behaviour	EU 27 average %	Ireland %	Sweden %	Ballina (N=191) %
You have switched to an energy supplier or tariff supplying a greater share of energy from renewable sources than your previous one	9	9	19	30
You are separating most of your waste for recycling	78	87	82	95
You are reducing the consumption of disposable items (for example plastic bags, certain kind of packaging, etc.)	41	45	54	82
You buy seasonal and local products to avoid products that come from far away, and thus contribute to CO2 emissions (because of the transport)	29	21	44	54
You have installed equipment in your own home that generates renewable energy (for example, a wind turbine, solar panels)	6	3	9	3
Other	1	1	2	22
Don't know	1	0	0	0

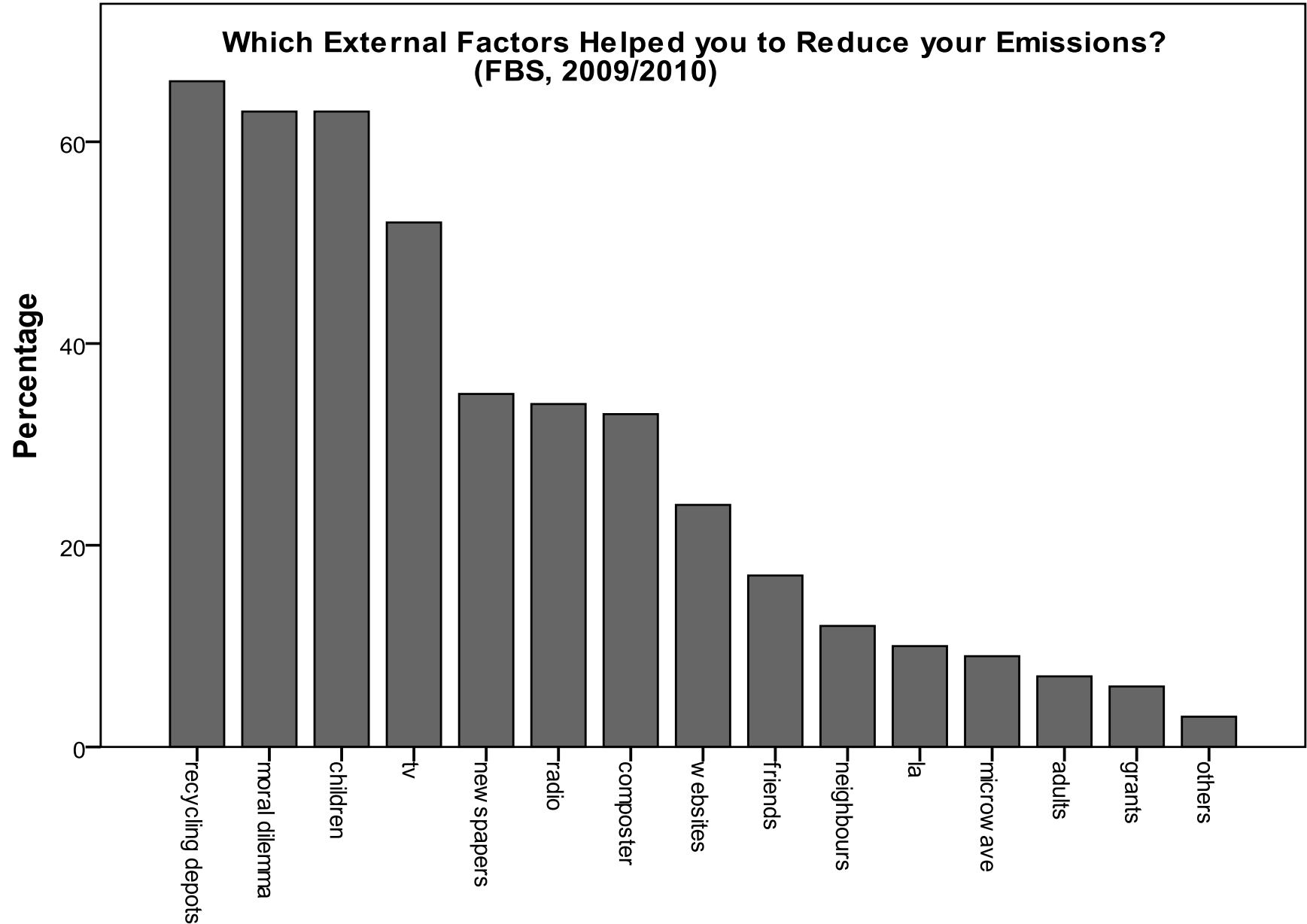
Behaviour Data Over Four Years

No.	Low Carbon Behaviour	% Uptake
1	Reuse	64
2	Compost	56
3	Walked	71
4	Train	8
5	Bus	8
6	Recycled	96
7	Reduced	78
8	Purchase of organic food	43
9	Purchase of CFL bulbs	83
10	Purchase of local food	49
11	Reduced short car trips	35

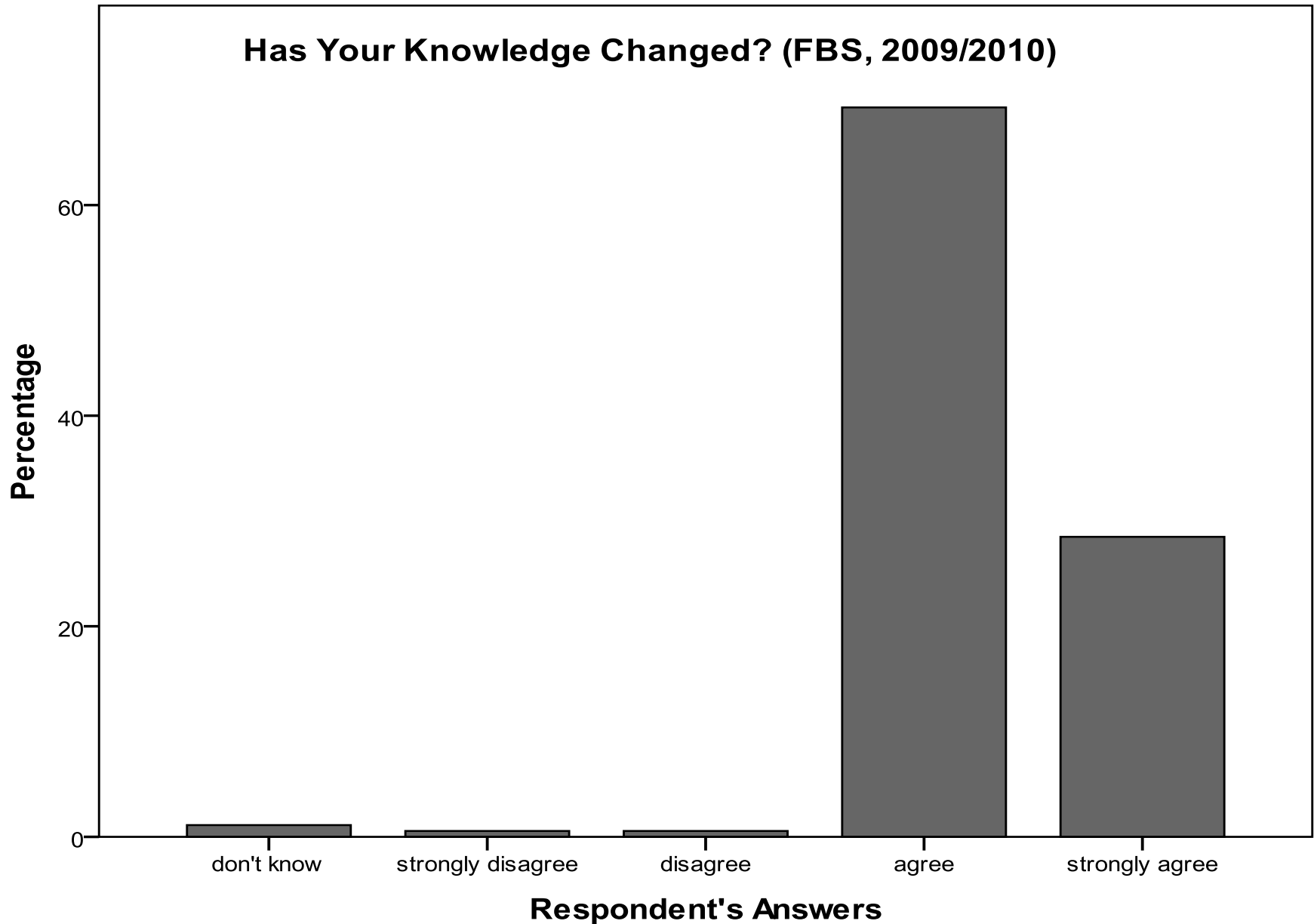
Drivers Implemented by the Study



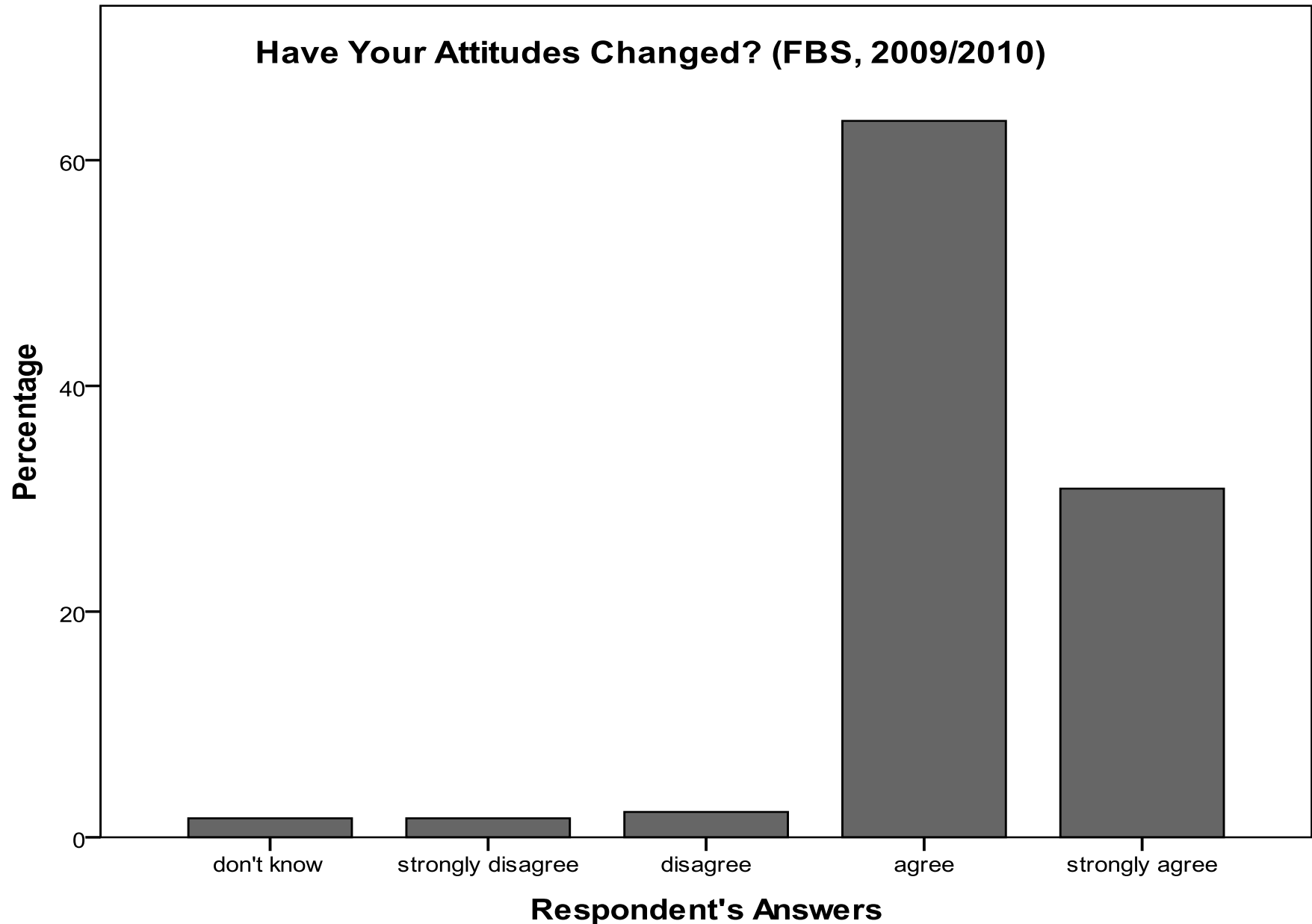
External Drivers



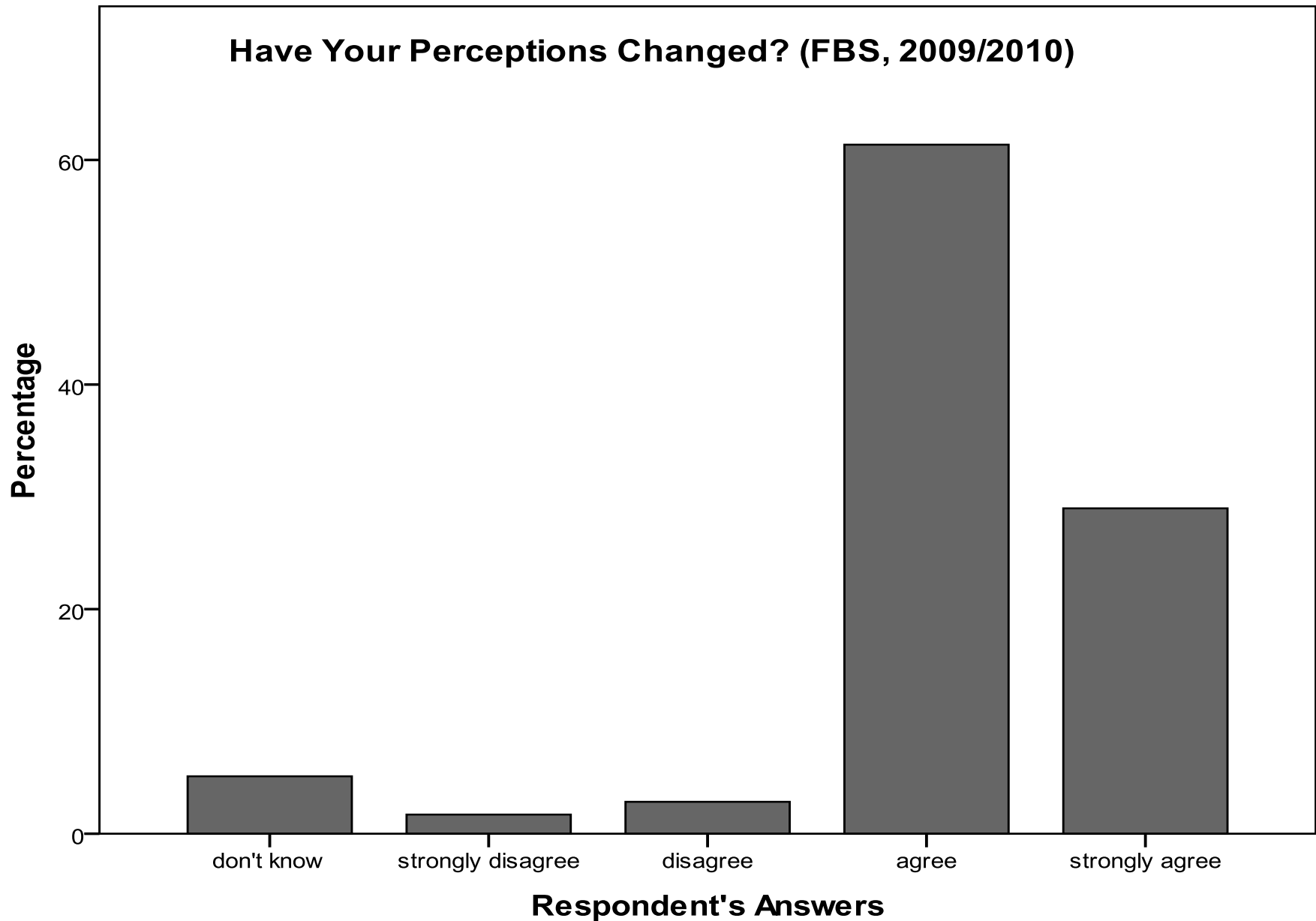
Knowledge Change in Ballina After the Study



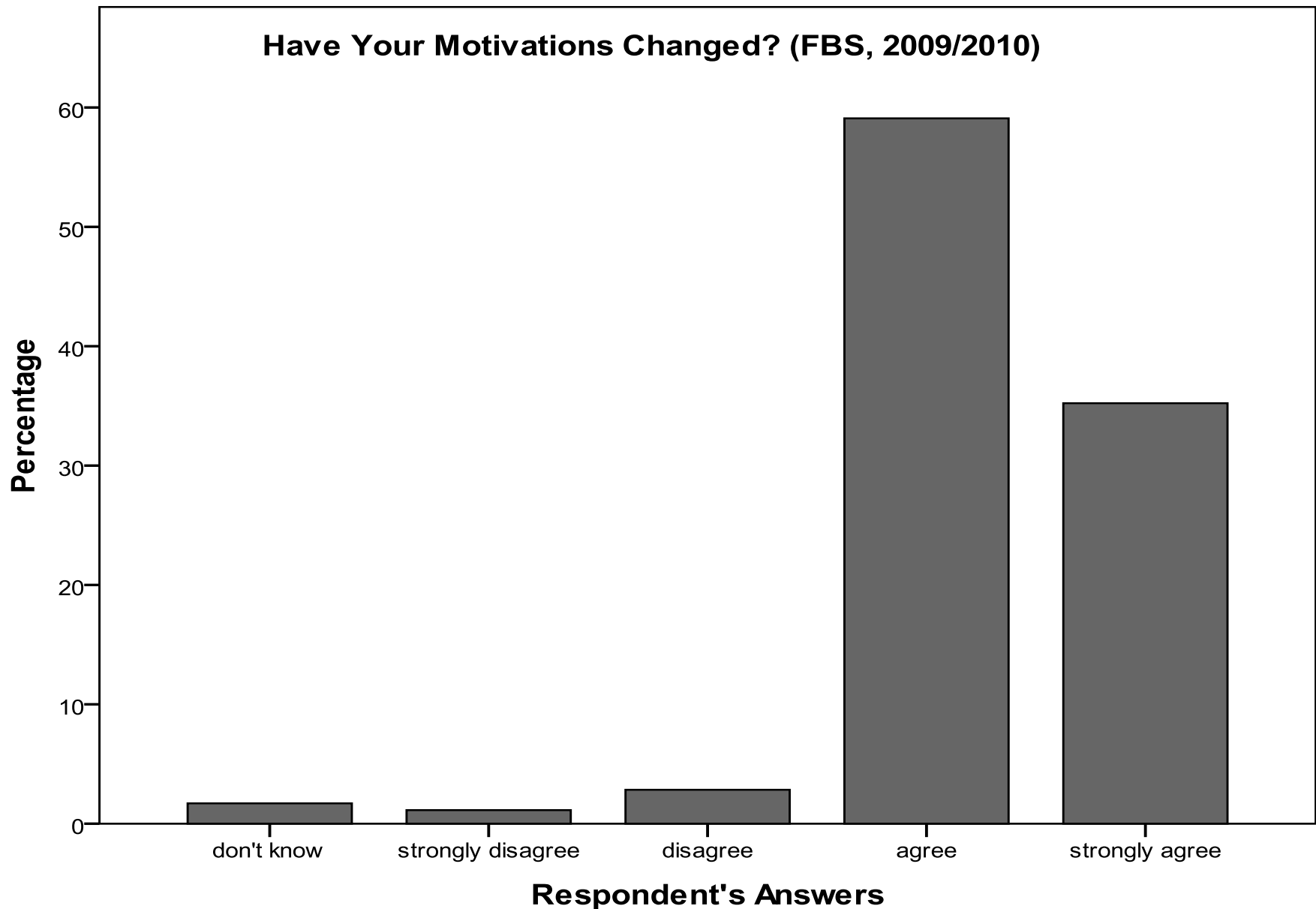
Attitude Change in Ballina After the study



Perception Change in Ballina After the study



Motivation Change in Ballina After the study



Research Results



Developed an EF method for Irish communities. Measured 88 community EFs

Worked with a Tipperary community for 5 years.

- Reduced its emissions by 28%.
- Equates to 4,900t CO₂.
- Validated by ISO 14064.
- PDD issued for verification.
- Cosain.
- www.ul.ie/lowcarbonfutures.



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