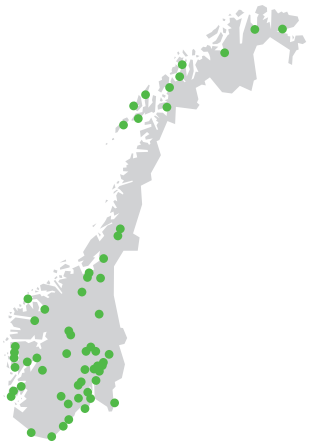
CO_2 on the way to School

2007 Web-based Environmental Research Campaign for Norwegian Secondary School Students

Ulnes skule (Nord-Aurdal, Oppland)

Purpose: Web-based research campaign designed for students to measure their own CO_2 contribution/emissions on their daily travel route to school.

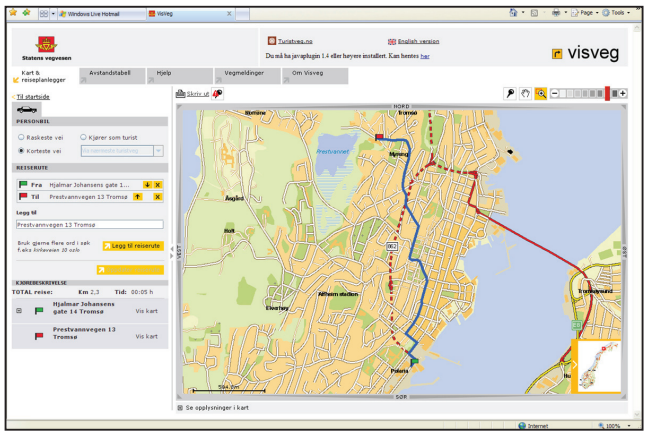
Goals: The campaign was designed to draw attention towards emissions of the most important human influenced climate gas, carbon dioxide – in connection with students transport to and from school. The participants were guided towards increasing their knowledge surrounding the general climate problem and to also reflect upon their own behavior and corresponding options for local solutions.



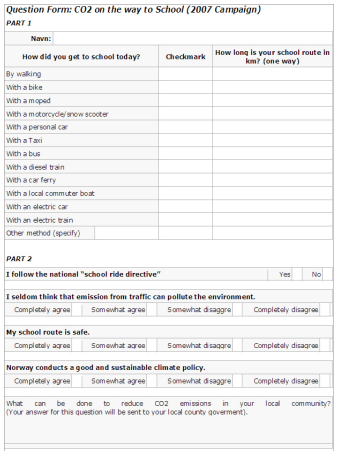
Participating schools throughout Norway

METHOD:

1. Each student measures school route individually



2. Enter individual data online, answer questions



Question Form: CO2 on the way to School (2007 Campaign)

PART 1

Navn:

How did you get to school today?	Checkmark	How long is your school route in km? (one way)
By walking		
With a bike		
With a moped		
With a motorcycle/snow scooter		
With a personal car		
With a Taxi		
With a bus		
With a diesel train		
With a car ferry		
With a local commuter boat		
With an electric car		
With an electric train		
Other method (specify)		

PART 2

I follow the national "school ride directive"	Yes	No

I seldom think that emission from traffic can pollute the environment.			
Completely agree	Somewhat agree	Somewhat disagree	Completely disagree

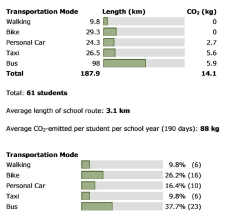
My school route is safe.			
Completely agree	Somewhat agree	Somewhat disagree	Completely disagree

Norway conducts a good and sustainable climate policy.			
Completely agree	Somewhat agree	Somewhat disagree	Completely disagree

What can be done to reduce CO2 emissions in your local community? (Your answer for this question will be sent to your local county government).

3. Website displays results, sorted by school

Calculated



Transportation Mode	Length (km)	CO_2 (kg)
Walking	9.8	0
Bike	29.3	0
Personal Car	24.3	2.7
Taxi	26.5	5.6
Bus	98	5.9
Total	**187.9**	**14.1**

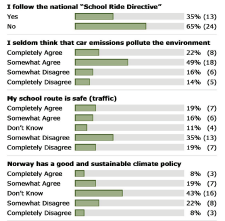
Total: **61 students**

Average length of school route: **3.1 km**

Average CO_2-emitted per student per school year (190 days): **88 kg**

Transportation Mode		
Walking	9.8%	(6)
Bike	26.2%	(16)
Personal Car	16.4%	(10)
Taxi	9.8%	(6)
Bus	37.7%	(23)

Compiled



I follow the national "School Ride Directive"		
Yes	35%	(13)
No	65%	(24)

I seldom think that car emissions pollute the environment		
Completely Agree	22%	(8)
Somewhat Agree	49%	(18)
Somewhat Disagree	16%	(6)
Completely Disagree	14%	(5)

My school route is safe (traffic)		
Completely Agree	19%	(7)
Somewhat Agree	16%	(6)
Don't Know	11%	(4)
Somewhat Disagree	35%	(13)
Completely Disagree	19%	(7)

Norway has a good and sustainable climate policy		
Completely Agree	8%	(3)
Somewhat Agree	19%	(7)
Don't Know	43%	(16)
Somewhat Disagree	22%	(8)
Completely Disagree	8%	(3)

RESULTS and ANALYSIS:

The data results show that the average length to school for all transportation modes is **4.5km**, where the average CO_2 emission per student per year is **95kg**. walking and biking to school represent 68.5% of all of the students total travel to school (**Ø** CO_2 emissions)!

The questionnair results show that a slight majority contemplate the fact that emissions can pollute the environment, most are unaware of Norway's climate policy, and most feel that their school route is safe. The survey also revealed many intuitive recommendations for local solutions to the climate problems confronted during the excercise, where the majority encouraged the increase use of non-polluting transportation modes.

Transportation Means (% recorded)	Length (km)	CO_2 (kg)	Calculation (kg/pkm)*
By foot (42.2%)	1058.7	0	0
Bicycle (26.3%)	1031.9	0	0
Moped (0.8%)	38.5	2.3	.06
Motorcycle/snow scooter (0.2%)	9	0.9	.10
Personal car (12.3%)	1184.9	130.3	.11
Taxi (2.2%)	406.5	85.4	.21
Bus (27.9%)	6082	364.9	.06
Diesel train (0.1%)	58.4	4.1	.07
Car ferry (0.1%)	11.2	1.3	.12
Local commuter boat (0.1%)	5.9	3.1	.53
Electric car (0.2%)	25.5	0.1	.0004
Electric train (2.4%)	750.3	1.8	.002
Other (0.8%)	28.1	0	0
Total	**10690.8**	**594.2**	

-Total: **2375 students**

-Average length to school: **4.5 km** *(10690 / 2375)*

-Average CO_2 emission per student during 1 school year (190 days): **95 kg** *(594 X 2 X 190 / 2375)*

* Fossil fuel related calculations derived from SSB document: Direkte energibruk og utslipp til luft fra transport i Norge 1994 og 1998 (Holtskog, 2001). Electric car and train calculations derived from ww.klimaloftet.no

Region	# of Schools	# of Students	School route avg. length (km)	CO_2 kg/year/student	CO_2 g/km
Finnmark	4	61	4.4	134.4	**80**
Møre og Romsdal	3	55	4.6	135.4	**77**
Troms	7	131	10.3	282.3	**72**
Sør-Trøndelag	4	92	2.9	79.5	**72**
Hedmark	6	196	4.4	114.3	**68**
Sogn og Fjordane	4	92	7.4	184.6	**66**
Nordland	5	103	4.3	101.1	**63**
Telemark	5	148	7.3	166	**60**
Nord-Trøndelag	2	42	7	151	**57**
Vest-Agder	2	63	5.3	115	**57**
Østfold	1	24	0.9	18.5	**55**
Buskerud	4	225	3.3	67.8	**55**
Aust-Agder	3	86	4.1	82	**53**
Oppland	6	140	2.9	52.7	**47**
Oslo	6	302	6.2	93.9	**40**
Akershus	9	177	2.1	31.8	**40**
Vestfold	3	93	3.4	51.5	**39**
Rogaland	3	45	1.8	25.1	**36**
Hordaland	9	300	2.3	26.3	**30**

I seldom think that car emissions can pollute the environment

Completely agree	21% (495)
Somewhat agree	38% (878)
Somewhat disagree	28% (640)
Completely disagree	13% (312

Norway follows a good and sustainable climate policy

Completely agree	8% (182)
Somewhat agree	22% (511)
Don't know	43% (997)
Somewhat disagree	18% (407)
Completely disagree	10% (225)

My school route is safe

Completely agree	33% (759)
Somewhat agree	26% (598)
Don't know	11% (258)
Somewhat disagree	19% (439)
Completely disagree	12% (276

Student recommendations (compiled into categories)	# received
Bike more (students, workers)	563
Walk more (students, workers)	559
Use more bus, train, trolly	383
Buy/use more environmental friendly cars (especially electric cars)	373
Drive cars less	327
Better public transportation (new routes, more stops, more departures)	234
Cheaper or free public transporation (especially bus)	221
More/better bike paths and walkways	154
Collective driving (to work, training, school)	119
Less trash, better sorting and recycling	75
More environmentally friendly public transportation	73
Raised gas prices	64
Save electricity (especially shower less, and turn off lights)	63
Use environmentally friendly fuels (especially biodiesel)	45

PARTNERS:

NILU — *Scientific and research based support.*

MILJOLARE.NO — ET VERKTØY FOR BÆREKRAFTIG UTVIKLING — *Website creation and management.*

Utdanningsdirektoratet — *Financing and administrative support.*

Further Information:

This poster is based upon the final analysis report entitled: CO2 på skoleveien, Elevbasert forskningskampanje som del av Forskningsdagene 2007 (Georg Hansen, Seniorforsker, NILU, 2008) and the english summary report entitled: CO_2 on the way the School (Scott Randall, forsker, NILU, 2008). Poster created by Scott Randall, NILU, July 2008.

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