# klimaträtt



# See, Understand, and Change Your Daily Climate Impact

RESULTS FROM THE KLIMATRÄTT PROJECT

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Making climate-friendly household choices – mindful choices – matters a lot to our climate impact.

Active participants cut their emissions by 31% without making any major sacrifices.

If all Swedes were to do this, it would take care of half of the emissions reductions Sweden is targeting for 2020. The challenge in changing our lifestyles is in getting past the initial barrier; after that, new habits are easy to maintain.

Our different effects on the climate reflect our different lifestyles; therefore, we need an array of solutions to motivate and create change.

## A family in Hässelby showed the way

The Lindells live in a single-family home in Hässelby. In 2011, they cut their climate pollution by 62% in six months – while maintaining their standard-of-living.

They used cutting-edge technology, coaching by experts on food, transport, living, and other consumption, and weekly, custom-estimated feedback on their climate impact.

The project – the One Tonne Life – drew attention and demonstrated that there is a huge potential for reducing emissions without any major restrictions on daily life. It just takes the right kind of knowledge and awareness of the impacts of our everyday choices and decisions.

The results inspired two major Swedish companies, ICA and Uppsalahem, to try to figure out if the experience can be scaled up, to allow more people to participate. Can households in apartment buildings cut their emissions in the same ways, using smart technology and more information about how daily choices affect the climate?



Frodeparken

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negotiating table!

## Klimaträtt – Finding climate answers in daily life

Sweden's largest grocery retailer, ICA, and one of the largest housing companies, Uppsalahem, launched the Klimaträtt Project and created a team of partners in the Home, Food, Transportation, and Other consumption categories. *Klimaträtt* is Swedish for *climate-friendly* or, literally, *climate-appropriate*. But it also connotes *climate-just*, as in climate justice, and, believe it or not, even *climate meal*.

Chalmers, WWF, and the IT-company Energimolnet were also invited to join and contribute their expertise and help develop the Klimaträtt App, which collects a user's consumption data, estimates the climate footprint in all consumption areas, and presents the information on the user's screen. The Swedish Innovation Agency, VINNOVA, supported the app development.

The residents of on of Uppsalahem's apartment buildings, Frodeparken, were invited in March 2015 to test the app for six months, receive a variety of climate-friendly services and offers, and learn and be inspired – for the purpose of limiting their negative effects on the climate.

#### **Project challenge:**

Can we help our customers cut emissions in such a way that they don't feel that they are making sacrifices and having to pay more, and we feel it makes sense commercially? If the answer is "Yes," then we've found an important and practical recipe for limiting climate pollution.

The main page of the app displays the user's climate footprint summary for the past several weeks, in total and by category: Food, Transport, Home, and Other consumption. Users can create their own personal targets and find out how well they did each week.

klimai

When the user is doing well, a thermometer shows the temperature going down, and a graphic shows the ice expanding and a happy polar bear. When emissions are greater than targeted, the ice floe melts, and the polar bear is in trouble.

## The Klimaträtt App – Making the invisible visible

How are we supposed to cut our emissions if we don't know how high they are or what causes them? They're invisible.

The Klimaträtt App is a key part of the project. On a weekly basis, the app provides feedback to the participants about how their homes, purchases, and other daily choices affect their climate footprints.

Each commercial partner has developed climate footprint data for its products and services. These data are used to automatically compute the climate footprint of each purchase and of ongoing expenses like rent and power bills. For the home, the calculation is based on the size of the residence and from data that the participating businesses already have. Chalmers provides quality control and ensures data commensurability. The calculations are collected in a database linked to the app. Participants sign up for accounts and approve the use of the information that uses the receipts for their purchases and other payments (already available), download and install the app, and link the businesses from which they want climate data. The more companies they include, the more complete the estimate of their climate footprints. Of course, in order to get feedback on their climate footprints, they have to use the products and services provided by the businesses they link to via the app.



## The participants – Frodeparken's climate pioneers

The participants in the Klimaträtt Project are a group of Uppsala residents who all live in the same apartment building, Frodeparken, in downtown Uppsala right next to the transit center, a hub for regional and local train and bus lines.

All of the 70 households in the building were invited to join the project, and 32 people signed up, about 25% of the residents. An initial survey asked participants about their consumption. Based on their responses, Chalmers estimated their baseline climate footprint, prior to the start of the project.

The graphic below shows the participants' starting points, covering their personal consumption. The high and low ends are far apart, 14 metric tons of carbon dioxide (CO2) emissions per year. The average is 7.9 tons per person per year, which is roughly the same as the Swedish average, 7.3 tons per person per year. What the emissions are due to varies a lot, too.

Some people have high emissions because they consume a lot, while others hardly shop at all but travel all the more.

Among the 32 who signed up, about 20 ended up being active participants. Most of these reported being fairly or very interested in the environment, and for many of them, this engagement grew over the course of the project. However, being interested in the environment does not guarantee that our choices are good for the climate.

The participants can be sorted into three groups: One group already led climate-smart lives prior to signing up for the project; one group started making more climate-smart choices because of the project; the third group did not achieve climate-smart status during or after the project.

#### Baseline for all participants

The participants' carbon dioxide emissions from personal consumption prior to the project, by consumption category. The national average also includes emissions from public consumption, another 1.7 metric tons per person per year.





Get to know two of the participants.



Emelie Henningsen Age: 27 Occupation: Works on sustainability issues at NCC Interests: Working out (running and swimming), chorus, playing games, vegetarian cooking.



Niklas Lundkvist Age: 27 Occupation: Nuclear physicist Interests: Economics, gardening, music (mainly listening), watching TV shows.

#### Niklas' climate footprint over the course of the project





# The project team – Providing solutions, inspiration, and information

Businesses in the most important consumer categories – food, living, and transportation – are part of the project. We want to estimate climate footprints as comprehensively as possible and offer the participants climate-friendly options, information, and inspiration in every area.

ICA and the local ICA store, ICA Torgkassen, offer inspiration for climate-friendly food and cooking. Uppsalahem offers the Nordic-Ecolabel-certified energy-efficient building where the participants live. The IT-company Energimolnet collects information about the participants' power usage and built the Klimaträtt App. Uppsala Länstrafik, Uppsala County public transit, encourages the participants to use public transit, and Sunfleet car-share service has a hybrid electric car in their pool of vehicles in the Frodeparken garage available for rent by the participants.

Participants who have their own cars can subscribe to Automile to keep track of miles driven, gas mileage, and carbon dioxide emissions. When participants use their ICA credit cards, ICA Banken provides climate footprint estimates for purchases, no matter where, or for what, the cards are used. For instance, if a cardholder uses the credit card to pay for air travel, the plane ticket is converted to carbon emissions and shows up in the transportation category in the Klimaträtt App. This means that the climate footprint of a service or product is included even if purchased from a vendor who is not part of the project.

Researchers at Chalmers monitor the validity of the calculations and are also in charge of project assessment. WWF provides information, mainly in the food category, and the city of Uppsala provides the project's city-related components.

#### Activities that inspire

- A food safari among climate-friendly products on the shelves at ICA Torgkassen
- An urban gardening event at Uppsalahem, focusing on balcony gardening
- Climate friendly cooking with the ICA chef at ICA's test kitchen
- A get together and exchange of ideas with the "One Tonne Life"-family and the "Carbon Dieter," Staffan Lindberg.
- Newsletters with climate-friendly recipes and advice on how to reduce your climate footprint.

## Results: Climate-friendly homes and mindful daily choices shrink climate footprints

## Overall climate footprint – Cut by 31%

Participants cut their home, food, and transportation emissions by 31%, on average.

30 participants activated the Klimaträtt App. After launching the app, participants decide which businesses to include, thereby determining how much of their climate footprint is covered. For 12 of the participants, the coverage was sufficiently comprehensive to allow for a comparison relative to their baseline pre-project footprint. Note that emissions from air travel and "Other" are not included in this calculation because of insufficient data. We don't know how much the emissions in these categories changed.

The figure shows the participants' average personalconsumption climate footprint from before the project and after the project, compared with the average Swede's footprint.



#### metric tons of CO2-eq per year





### Home Reduction: 32%

## Moving to climate-friendly housing can have a big climate-footprint impact.

The apartment building Frodeparken was completed toward the end of 2013, so all of the participants are fairly new residents. We wanted to include the impact of moving to more climate-friendly housing, so we chose to use the participants' pre-Frodeparken housing as the baseline for the "Home"-category.

The climate footprint for this category is based in part on construction and upkeep of the building, including heat, and in part on residential power consumption. In order to get a comprehensive climate footprint, participants could link to both Uppsalahem (the building owner) and Energimolnet (a company providing individual information about residents' power consumption). For 12 of the participants, we had enough data to assess by how emission-cuts in this category.

The two most important reasons for emission cuts in this category are that Uppsalahem purchases bio-based, carbon-neutral, district heating for Frodeparken and that power consumption was lower already on day one for the new residents. Power use also continued to decrease during the course of the project. On average, residents used 13% less power in the fall, compared with the preceding spring. This is a fairly large cut, compared with other initiatives for reducing residential power consumption.

The major change, in addition to moving to Frodeparken in the first place, was simply turning off lights and not leaving devices on standby. One participant mentioned how she never used to think about turning off the lights – now she almost always does.



### Daily transportation Reduction: 58%

For many participants, Frodeparken's convenient location makes it easy to rely on more climate-friendly transportation.

We estimate that the participants' collective emissions from road/rail travel decreased by 58% relative to the pre-Frodeparken baseline. A few of the participants account for most of the change.

Participants' transportation climate footprints are measured in several ways.

- Use of transit passes for Uppsala County public transit
- Use of Sunfleet car-share services
- Use of Automile, which tracks use of privately-owned vehicles
- Travel purchases made with an ICA credit card.

We analyzed the impact on climate footprints for the 13 participants with the most comprehensive coverage for daily transportation: those who had transit passes, those who reported not having a car, and those who reported having a car and for which car-travel data were available.

Some participants started using the car-share service. Others sold their cars upon moving to Frodeparken because they felt they got by better without a car and could use their bikes more. Four of the participants cut their car use dramatically. Some did not change their transportation habits at all, probably because they already biked and walked before they moved to Frodeparken and have continued to do so.



#### Food – new habits

The participants found the "Food"-category the most engaging. Several report becoming interested in sustainability issues related to food through the project.

Our food causes climate impacts because of the greenhouse gas emissions that take place when the food is produced and transported. The climate impacts of various food items vary by a lot. This means that changing your diet and replacing various items can make a big difference to your food climate footprint. ICA provides information about the climate impacts of various food items and offers inspiration for cooking. Food emissions were measured when participants used their ICA cards at ICA Torgkassen, their ICA credit cards, and through surveys before and after the project.

The most common changes:

- Choosing vegetarian food more often
- · Throwing away less food
- Buying organic and local foods
- · Choosing game, pork, chicken or fish, instead of beef

The food footprint decreased by about 10% based on the surveys. However, for some participants, the food climate footprint grew, instead. So the impact cannot simply be said to have shrunk. The participants did not consistently shop at ICA Torgkassen or use their ICA credit cards, so the entire effect on the "Food"-category cannot be determined with the app. However, the interviews suggest that the cuts may be greater than what could be measured, based on the changes reported by the participants. For example, choosing a veggie or chicken burger instead of a hamburger corresponds to cutting the emissions for that meal by 90%. If participants have made these kinds of choices consistently, their food climate footprints have shrunk substantially.



### Other consumption and air travel – being mindful and present

Most participants report shopping less and considering purchases more before making them. Some report buying more used rather than new items.

Several report choosing to travel by train rather than by air when possible and choosing other destinations than previously.

However, in these categories, there is not enough quantitative data to analyze changes in climate impact. The ICA credit card was supposed to allow for estimates of emissions from "other shopping" and transportation purchased from vendors that aren't part of the project. However, as it turns out, few participants linked their credit cards to the app, so these other purchases have not been registered.

... air travel is one of the major sources of impacts, from what I understand, so it's on my mind.
It takes a lot of soy milk to make up for one trip by plane.

Well, I tend to want to eat some meat...but, well, maybe I don't have to have a hamburger, I can have a chicken burger or a veggie burger.

# Smaller climate footprints without major sacrifices? The experience of the participants.

#### The pros outweigh the cons

By attempting to live climate-friendly lives, the participants did make some sacrifices, but they feel the positive consequences of the new lifestyle make up for the sacrifices, at least in part. All interviewees report that the project has had a positive impact on their level of satisfaction. Many have a positive attitude to vegetarian food. The food is said to taste good, keep better in the refrigerator or pantry, and be inspiring. Likewise, organic and local produce are considered to be of higher quality. However, vegetarian cooking is said to be somewhat limiting, given that several protein sources are excluded.

It's fun to bike, too. You betcha! And you get exercise and build up stamina, too."

Participants report that it is easy to go by bike and easy to use the cars in the Sunfleet car-share pool. Sunfleet provides simple and convenient access to vehicles, which for some participants meant that they postponed purchasing a car or simply decided not to. Some current car owners are even considering selling their own cars because it's so easy to use the car-share service. However, when it comes to the decision to go by car or to use some other method, some of the participants report that not going by car requires more planning and that it's more convenient to simply take the car.

Several participants reported enjoying gardening on their balconies and being able to harvest the results of their efforts.

#### There are barriers to changing habits, but once these have been overcome it's easy to keep going

Breaking old habits and changing ingrained behavior is obviously hard. Beginning to reflect over one's behavior and trying to change it takes willpower, but in many cases it's the change process, not the new behavior itself, that is challenging. For instance, switching to vegetarian food is reported to take effort in the beginning. Figuring out how to cook good and varied vegetarian meals is a learning process. But once the participants get going, they experience vegetarian cooking as satisfying, and it's easy to keep going.

#### Requires planning time, offers quality time

Several participants think of wasting less food as related to better weekly scheduling, which has been seen as a barrier: It takes time and effort to plan cooking, especially if there is a lot of other stuff going on at the same time. However, improved weekly scheduling has meant that some participants have been able to go shopping less frequently, which saves time.

Travelling by train instead of by air takes more time, especially for longer trips, but going by plane doesn't always actually save time if you count travel time to and from the airports. The longer travel times sometimes serve to rule out train travel. But several participants highlight the fact that the time on the plane cannot be compared to the time on the train. Flying is more stressful due to security and other interruptions during the travel. Train travel allows for more relaxation, it's simply more pleasant, and the time can be spent more productively, all of which are positive aspects.

#### Positive impacts on health

Many of the participants feel that their new habits have had positive impacts on their health. Several report that they feel better because of the switch to more vegetarian food and cutting back on red meat. One person also said it was easier not to gain weight. Increased travel by bike has also provided participants with more exercise on an everyday basis.

## Social impact – reactions from friends and family

The project as a whole and some of the changes have impacted the participants socially. Most of the participants have discussed the project with friends or family, mainly with those who are interested in environmental and/or climate issues. Most of the reactions have been positive and encouraging, serving as positive reinforcement and confirmation that the actions are good and important. Switching to only vegetarian food is reported to have been socially complicated. Some participants have had to persuade other family members to change meals and diets, which has required energy and patience. Visiting others and hosting others is also reported to be complicated for vegetarians.

> "Yes, but it's a good kind of bad conscience. It's not a...it's definitely not a bad bad conscience."

#### A climate conscience takes root

Because the participants have learned more about how various choices and decisions affect the climate, they sometimes have a bad conscience, or a good conscience depending on what choices they have made. That is, they have developed a climate conscience. This climate conscience has become a strong driver for more climate-friendly living, by manifesting as both a good and a bad conscience. A better climate conscience or a feeling that we are doing the right thing comes as a consequence of making climate-friendly choices, generating an internal positive feedback loop. On the other hand, when the Klimaträtt App shows that a particular action has resulted in high emissions, or when we do something climate-unfriendly in spite of knowing what the impact is, we get a bad conscience.

Saving power leads to a good conscience, and so does purchasing organic and local food, not choosing to fly, or choosing to shop less. Choosing to fly instead of taking the train leads to a bad conscience.

However, the participants do not experience the bad conscience as a bad thing in and of itself. The experience is somewhat uncomfortable, but the underlying reason is considered positive. The bad conscience feels justified and is described as a positive impact of the project.

#### Impact on consumer budgets

The project aims to not affect consumer budgets negatively. However, we have not been able to perform a thorough quantitative analysis of how the project impacted budgets. Participants report both added costs and savings. Of the participants, 53% report that they have made changes to reduce their climate footprints that have led to cost savings, 27% have made changes that have led to additional expenses, and 20% don't know. The participants say savings come from eating less meat, using less water and power, shopping less, and buying more used items. The savings are considered an extra bonus that comes with a climate-friendly measure, not the primary reason for the change.

If participants previously had a car or have owned one for a long time, they consider the car-share service Sunfleet to be expensive relative to using a privately owned vehicle. The hybrid electric vehicle in the garage is considered expensive because it costs much more per hour than the diesel car in the same size category. Organic products are considered expensive for the same kinds of reasons. Some participants consider the extra cost justified because they understand the higher cost, so the added expense is not experienced as a major sacrifice. Other participants feel the financial sacrifice is too great and choose conventional or less climate-friendly products.

Several participants describe the rent at Frodeparken as very high. Some, especially students, report the high rent to be a major sacrifice. Other participants instead report allocating their income differently since they moved to Frodeparken, now spending more on housing but saving money on changes they have made in the "Transportation"-category.

The changes made in the "Food"-category, switching to more vegetarian meals, changing the type of meat, and wasting less food, all probably entail cost savings in addition to emissions reductions, but participants don't have a clear impression of this. Instead, they point out that organic produce is more expensive. Organic food does not have any obvious climate advantages (the benefits are generally other kinds of environmental benefits), but climatefriendly food will seem more expensive to consumers if they equate it with organic food. This is an example of an area where information outreach can provide participants with additional incentives to make climate-friendly choices in the "Food"-category.





## Conclusions

Klimaträtt demonstrates that people who are somewhat interested in the environment can be motivated to take action to reduce their climate footprints.

No single measure served to get the participants going. Feedback via the Klimaträtt App, inspiration, and learning all seem to have played roughly equal roles (albeit not for each person), but without the initiative, the changes made would probably not have taken place.

The changes the participants made have clearly had a positive impact on their climate footprints. In the areas with comprehensive data coverage, emissions were cut by, on average, 1.6 metric tons per person per year. We have reason to believe the actual reduction is greater because the participants have reported making substantial changes in areas we haven't been able to assess. The participants' experiences with living more climate-friendly lives are of particular interest. As mentioned, we were trying to make it easier for the participants to live more climate-friendly lives. The participants report that once a habit is established, keeping it up required no effort, but that the initial getting-going took effort. Some sacrifices had to be made, but many report that the benefits made it worth the effort.

Choices made in everyday life have a tremendous potential to reduce Swedish climate pollution.



Many Swedes want to learn more about what they can do to help stop climate change (59% of Swedes according to one recent survey by SIFO), but they need a helping hand. The Klimaträtt Project demonstrates that when businesses work together, they can help consumers overcome barriers, making it easier for individuals to lead climate-friendly lives.

This Project and its participants also show us that there is much more we and other businesses can do to help customers make climate-friendly choices.

### **Project evaluation**

This Project has monitored and evaluated the carbon footprint of each participant's personal consumption. For individuals, personal consumption makes up most of the carbon footprint.

The carbon dioxide calculations are based on two main perspectives: *lifecycle* and *consumption*.

The aim of the lifecycle perspective is to consider all emissions during the lifecycle of a product, through production, use, and disposal.

The consumption perspective considers all emissions linked to final use of a product or service. The emissions may be generated in Sweden or somewhere else, but the consumer is still considered "responsible" for them.

When we say "climate footprint," we are referring to an estimate of the emissions of the greenhouse gases carbon dioxide, methane, and nitrous oxide, expressed in terms of carbon dioxide equivalent units, "CO2-eq." The data sources we used in quantifying the emissions reductions include data collected with the Klimaträtt App and responses to the initial survey. The survey questions about food and driving were posed again at the end of the project.

The quantitative assessment of the participants' experiences with living climate-friendly lives is also based on an end-of-project survey and an interview with the most active participants. Of the participants, 17 responded to the survey (53%), and 13 (41%) participated in half-hourto hour-long interviews.

Associate Professor Fredrik Hedenus at Chalmers is principally responsible for the calculations of the participants' climate footprints. Chalmers sociologist and environmental researcher Jörgen Larsson led the assessment of the participants' experiences and their sense – or not – of sacrifice, and engineer and project assistant Anneli Kamb performed the assessment.



## Now what?

Most of us have no idea what our own climate footprints really look like or which simple changes in our everyday lives could make a big difference.

The Klimaträtt Project has developed the Klimaträtt App, which can provide a realistic impression of our climate footprints and monitor how various daily decisions and choices affect how much we impact the climate. Insight and knowledge are key components in helping people live more climate-friendly lives. Businesses are crucial in this context, because they have the power to make it much simpler for people to make informed decisions. We need more climate-friendly options and better information about the climate footprints of various products and services.

In Sweden, we live as if we have 3.7 planets at our disposal, so in the greater scheme of things, we will all have to change how we produce and consume products and services sooner or later. We are happy to be leading this process and sharing what we learn from our experiences, but we have found out that some barriers are harder to overcome than others. More stakeholders need to work together to remove these barriers. We hope Klimaträtt can mobilize more businesses to realize the potential for emissions reductions at the consumer level – in collaboration with their customers. Our responsibility for the climate effects of our products does not end when we sell them; it extends beyond this to the end-use of our products as well.

The Project Team is moving ahead, assessing whether Klimaträtt can be scaled up further. Can we include additional categories or additional stakeholders within the already included categories, in order to increase the value and relevance for consumers? Can we implement the project in an entire city district or a whole city?



#### CONTACT AND QUESTIONS

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