Energy
National Research Programmes 70 and 71

Project

Virtual competition for energy-efficient mobility

Games and competitions for more sustainable mobility

Games and competitions for more sustainable mobility

If more people were to abstain more often from using their car, large amounts of energy could be saved, and this in turn would lead to lower CO_2 emissions. An app by the name of GoEco! aims to change the behaviour of its users and to encourage them to travel in a more climate-friendly and sustainable way.

Endless brake lights: an everyday sight on Swiss roads *Source:* Shutterstock

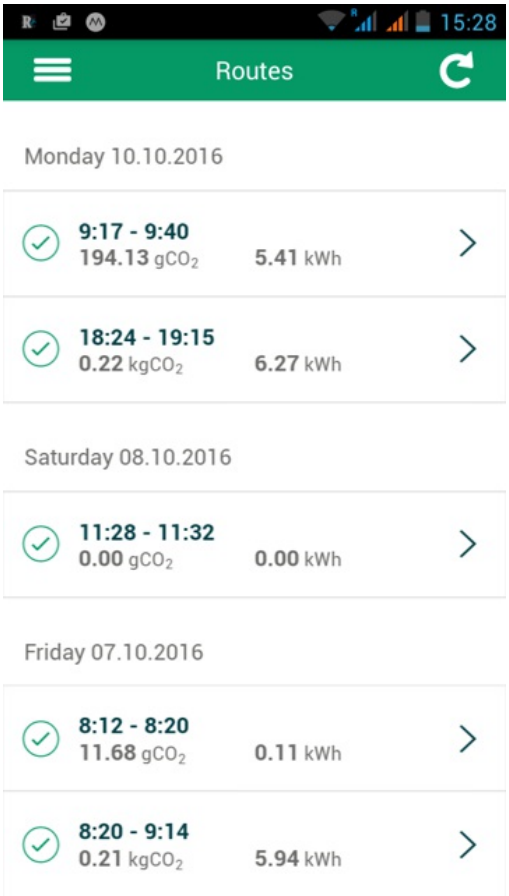
At a glance

- Mobility accounts for a large proportion of Switzerland's energy consumption. Accordingly, there is great potential for savings in this area, for example by doing without a car more often.
- To motivate Swiss people to travel more frequently by public transport, on foot or by bicycle, researchers have developed the GoEco! app.
- The app records users' habits, gives them tips on how to travel their daily routes more sustainably and offers a competition between participants.
- After one year, the number of kilometres the participants from Ticino had travelled by car had decreased, and alternative means of transport had been chosen more frequently.

Every day, thousands of cars congest Swiss city centres and motorways – a tedious situation for motorists and a huge problem for our climate. Mobility accounts for approximately one third of Switzerland's energy consumption and is therefore also the source of a large proportion of CO2 emissions. The potential for savings in this area is significant, but in general individuals are not willing to change their mobility behaviour. Researchers at the University of Applied Sciences and Arts of Southern Switzerland (SUPSI) and the ETH Zurich therefore aimed to determine how Swiss people can be persuaded to leave their vehicles in the car park more often and to switch to other, more sustainable means of transport. For this purpose, they developed the GoEco! app, which records users' mobility habits, suggests ways to improve their behaviour and offers them the opportunity to compete with other users. The aim of the app is to induce a long-term change in users' behaviour, leading to more sustainable and climate-friendlier travel.

More sustainable alternatives for systematic routes

In order to put GoEco! to the test, the researchers conducted a field trial over a period of one year. For this purpose, they recruited volunteers from two regions of Switzerland: firstly, from the city of Zurich, which is densely populated, has a well-developed public transport network and also offers cyclists and pedestrians adequate infrastructure such as cycle paths and sidewalks. Secondly, from the canton of Ticino, which is much less densely populated and a highly car-dependent area. All test persons were asked to use the app to record their routes. GoEco! was coupled with an existing fitness app called Moves, thus relieving the researchers of the task of developing their own mobility tracker. This app records the distances covered and can also determine speed. Since Moves cannot tell whether a person is travelling by bus, tram, train or car, the researchers developed a method that uses the speed of the movement, the acceleration and the stops to determine which means of transport the test person has chosen.



List of individual trips in the app. SUPSI

For each route travelled, users received feedback regarding the distance travelled, duration, energy consumption and CO_2 emissions. They were also sent a weekly summary of their mobility pattern. For the routes the test persons covered regularly, the app suggested alternatives, such as walking distances of less than one kilometre or cycling stretches less than three kilometres long. The researchers mainly focussed their proposals for more sustainable mobility on everyday routes such as those covered to commute to work or to go shopping. Changing these routes is easier to plan and has a greater impact, as in this context the choice of more sustainable means of transport makes it possible to save energy on a daily basis.

Competition between participants

Weekly summary of mobility behaviour, as displayed by the app. SUPSI

In order to further motivate the test subjects, the app offered them the possibility to set personal goals and the opportunity to participate in challenges such as abstaining from using a car for an entire weekend or covering all short routes on foot or by bike during a given week. By achieving their personal goals and successfully completing a certain number of challenges, the users were then able to compete with other participants.

Although only 52 of the approximately 600 volunteers who had initially signed up for the trial were still using the app after one year, the researchers were able to gain a certain number of significant results. It turned out that by the end of the year the participants from the canton of Ticino covered fewer kilometres by car than at the beginning of the experiment. Accordingly, the number of kilometres covered by public transport, on foot or by bicycle increased. This also had a positive effect on CO2 emissions: on average, the participants saved 33.1 grams of CO_2 per kilometre of their daily routes.

For the test subjects from the city of Zurich, on the other hand, no significant changes were observed. According to the researchers, this is probably due to the fact that public transport had already played an important role in their daily lives prior to the experiment.

For the time being, the GoEco! project has come to an end. However, the researchers were able to gain important insights and to formulate recommendations from which follow-up projects such as the SBB's Green Class project have benefited.

Produkte aus diesem Projekt

- From location tracking to personalized eco-feedback: A framework for geographic information collection, processing and visualization to promote sustainable mobility behaviors
  Date of publication: 01.01.18
- GoEco! Extracting Eco-Feedback from Movement Trajectories
  Date of publication: 01.01.18
- Assessing the Influence of Spatio-Temporal Context for Next Place Prediction using Different Machine Learning Approaches
  Date of publication: 01.01.18
- Demo Abstract: Extracting Eco-Feedback Information from Automatic Activity Tracking to Promote Energy-Efficient Individual Mobility Behavior
  Date of publication: 01.01.18
- Energy-based Routing and Cruising Range Estimation for Electric Bicycles
  Date of publication: 01.01.18
- A model and framework for matching complementary spatio-temporal needs
  Date of publication: 01.01.18
- A Heuristic for Multi-modal Route Planning
  Date of publication: 01.01.18
- Promoting sustainable mobility styles using eco-feedback and gamification elements. Introducing the GoEco! living lab experiment
  Date of publication: 01.01.18
- Exploiting Fitness Apps for Sustainable Mobility – Challenges Deploying the GoEco! App
- Mobilität in Bewegung Wie fährt die Schweiz in die Zukunft?
  Date of publication: 01.01.18
- GoEco! A smartphone application leveraging eco-feedback and gamification techniques to nudge sustainable personal mobility styles
  Date of publication: 01.01.18
- Matching ComplementaryTransport Needs of People
  Date of publication: 01.01.18
- GoEco! A community based eco-feedback approach to promote sustainable personal mobility styles
  Date of publication: 01.01.18
- GoEco! A community based eco-feedback approach to promote sustainable personal mobility styles
  Date of publication: 01.01.18
- GoEco! Eco-feedback e confronto sociale per promuovere stili di mobilità sostenibili
  Date of publication: 01.01.18
- Location Based Services und Eco-Feedback zur Förderung von nachhaltigem persönlichem Mobilitätsverhalten
  Date of publication: 01.01.18
- App GoEco in pillole
  Date of publication: 01.01.18
- App GoEco versione approfondita
  Date of publication: 01.01.18
- GoEco! Zeitgemässe Instrumente zur Motivation energieeffizienter Mobilität
  Date of publication: 01.01.18
- GoEco! - A Set of Smartphone Apps Supporting the Transition Towards Sustainable Mobility Patterns

Date of publication: 01.01.18

- GoEco! – A Set of Smartphone Apps Supporting the Transition Towards Sustainable Mobility Patterns
  Date of publication: 01.01.18
- Towards Sustainable Mobility Behavior: Research Challenges for Location-Aware Information and Communication Technology
  Date of publication: 01.01.18
- A Taxonomy of Motivational Affordances for Meaningful Gamified and Persuasive Technologies
  Date of publication: 01.01.18
- Score design for meaningful gamification
  Date of publication: 01.01.18
- Eco-Feedback And Gamification Elements For Sustainability: The Goeco! Living Lab Experiment
  Date of publication: 01.01.18
- Challenges and Results from Deploying the GoEco! Tracker App
  Date of publication: 01.01.18
- GoEco! Project spot [Italian]
  Date of publication: 01.01.18
- TI Energia
  Date of publication: 01.01.18
- Dalla Supsi "GoEco!, la App per la mobilità sostenibile
  Date of publication: 01.01.18
- Il Quotidiano
  Date of publication: 01.01.18
- Un gioco per la mobilità sostenibile
  Date of publication: 01.01.18
- Mobilità, la Supsi cerca 'cavie'
  Date of publication: 01.01.18
- GoEco! Project spot
  Date of publication: 01.01.18
- GoEco!Tracciamento della mobilità, eco-feedback e confronto sociale per promuovere una mobilità più sostenibile
  Date of publication: 01.01.18
- GoEco! Tracciamento della mobilità, eco-feedback e confronto sociale per la promozione di una mobilità sostenibile
  Date of publication: 01.01.18
- Promoting sustainable mobility styles using eco-feedback and gamification elements. Introducing the GoEco! living lab experiment
  Date of publication: 01.01.18
- GoEco! un’App SUPSI per promuovere la mobilità sostenibile
  Date of publication: 01.01.18
- Anteprima di GoEco!, l’App SUPSI-ETH che aiuta a fare scelte di mobilità più sostenibili
  Date of publication: 01.01.18
- GoEco! website
  Date of publication: 01.01.18
- GoEco! - Nudging People to Travel Sustainably
  Date of publication: 01.01.18
- Mehr Als ein Spiel
  Date of publication: 01.01.18
- Bien Plus qu’un sim ple jeu
  Date of publication: 01.01.18
- “GoEco!” fördert nachhaltige Mobilität
  Date of publication: 01.01.18
- GoEco! Flyer in english
  Date of publication: 01.01.18
- Tutorial GoEco! in english
  Date of publication: 01.01.18

[Schweizerdeutsch]
Date of publication: 01.01.18

- Forscher steuern uns per App
  Date of publication: 01.01.18
- App A Chilometro Zero
  Date of publication: 01.01.18
- L'app che aiuta a scegliere la mobilità più sostenibile
  Date of publication: 01.01.18
- Spielerisch unterwegs
  Date of publication: 01.01.18
- Mobilità Pedalare con l'app SUPSI per inquinare meno
  Date of publication: 01.01.18
- Studien zur Verhaltensänderung und MIV-Reduktion
  Date of publication: 01.01.18
- Anteprima di GoEco!, l'App SUPSI-ETH che aiuta a fare scelte di mobilità più sostenibili
  Date of publication: 01.01.18
- Non chiamatemi Sandra
  Date of publication: 01.01.18
- GoEco, uno stimolo a cambiare
  Date of publication: 01.01.18
- L'app che ti spinge a muoverti meglio
  Date of publication: 01.01.18
- GoEco, un'app per provare a cambiare la tua mobilità
  Date of publication: 01.01.18
- Cercansi persone disposte a testare l'app GoEco!
  Date of publication: 01.01.18
- Fa' la strada giusta, GoEco!
  Date of publication: 01.01.18
- GoEco! app per l'ecomobilità
  Date of publication: 01.01.18
- Turtorial GoEco! in italian
  Date of publication: 01.01.18
- Tutorial GoEco! in Schweizerdeutsch
  Date of publication: 01.01.18
- WISSEN SCHAFFT DEN STAU AB
  Date of publication: 01.01.18
- LA SCIENCE S'ATTAQUE AUX BOUCHONS
  Date of publication: 01.01.18
- GoEco! Kick-off Konferenz
  Date of publication: 01.01.18
- Bewohner der Schweiz reisen im Durchschnitt 20'500 km pro Jahr.
  Date of publication: 01.01.18
- Jeden Tag fahren 25'000 Autos am Bahnhof Zürich vorbei. Aufgereiht wäre das die Distanz von Zürich nach Bern.
  Date of publication: 01.01.18
- Die Hälfte der Autofahrten in der Schweiz ist kürzer als 5 km. Das sind nur 15 min mit dem Velo.
  Date of publication: 01.01.18
- 75 % der zurückgelegten Kilometer in der Schweiz werden mit dem Auto gefahren.
  Date of publication: 01.01.18
- GoEco! Eco-feedback e confronto sociale per promuovere stili di mobilità sostenibili
  Date of publication: 01.01.18
- GOEco! Facebook page
  Date of publication: 01.01.18
- Mobility Analyzer – ETH & E360
  Date of publication: 01.01.18
- GoEco! Twitter page
  Date of publication: 01.01.18
- Challenges and opportunities of

- GoEco!
  Date of publication: 01.01.18
- GoEco! – Was kann die neue App?
  Date of publication: 01.01.18
- “GOECO!” FÖRDERT NACHHALTIGE MOBILITÄT
  Date of publication: 01.01.18
- Im Schweizer Strassenverkehr muss ein Umdenken erfolgen
  Date of publication: 01.01.18
- ETH-Forscher wollen mit einem App das Mobilitätsverhalten im Alltag beeinflussen
  Date of publication: 01.01.18
- From Location Tracking To Personalized Eco-Feedback: Results From The GoEco! Study
  Date of publication: 01.01.18
- MOMENTAUFNAHME NACHHALTIGER MOBILITÄT
  Date of publication: 01.01.18
- Technik-Tagung zum Thema Mobilität/Energie ab 2030+
  Date of publication: 01.01.18
- Erkenntnisse aus den gesammelten Mobilitätsdaten von SBB Green Class
  Date of publication: 01.01.18
- using geodata in mobility and energy
  Date of publication: 01.01.18
- Optimizing mobility systems – a spatial and user perspective.
  Date of publication: 01.01.18
- Trends der Geografischen Informationswissenschaft
  Date of publication: 01.01.18
- GI macht mobil! Was macht die Forschung?
  Date of publication: 01.01.18
- Räumliche Informationstechnologien für Smart Cities der Zukunft
  Date of publication: 01.01.18
- Mobilità urbana: come si muoveranno gli svizzeri in futuro?
  Date of publication: 01.01.18
- Completed research project: Virtual competition for energy-efficient mobility
  Date of publication: 01.01.18
- Wie macht man bei der Studie mit?
  Date of publication: 01.01.18
- Digital Day 2017
  Date of publication: 01.01.18

Contact & Team

Roman Rudel
Istituto sostenibilità applicata all'ambiente costruito
Campus Trevano, Via Trevano
6952 Canobbio

+41 (0)58 666 63 51
roman.rudel@supsi.ch

Roman Rudel
Projektleitung

Massimo Botta

Dominik Bucher

Francesca Cellina

Vanessa De Luca

Luca Morici

Martin Raubal

Andrea Emilio Rizzoli

Paul Weiser

Associated projects

Sharing is saving

Carsharing Helps Save Energy - But Only if Services Are Regulated

PEM fuel cells

Fuel Cells for Sustainable Mobility

All information provided on these pages corresponds to the status of knowledge as of 13.06.2019.