TUHH
Technische Universität Hamburg-Harburg

United Nations Forum on Climate Change Mitigation, Fuel Efficiency and Sustainable Urban Transport

SESSION V: Innovative business models in offsetting emissions from private motor vehicles

The Case of ARKTIK – A system innovation for sustainable mobility from Germany

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Seoul, 17.03.2010

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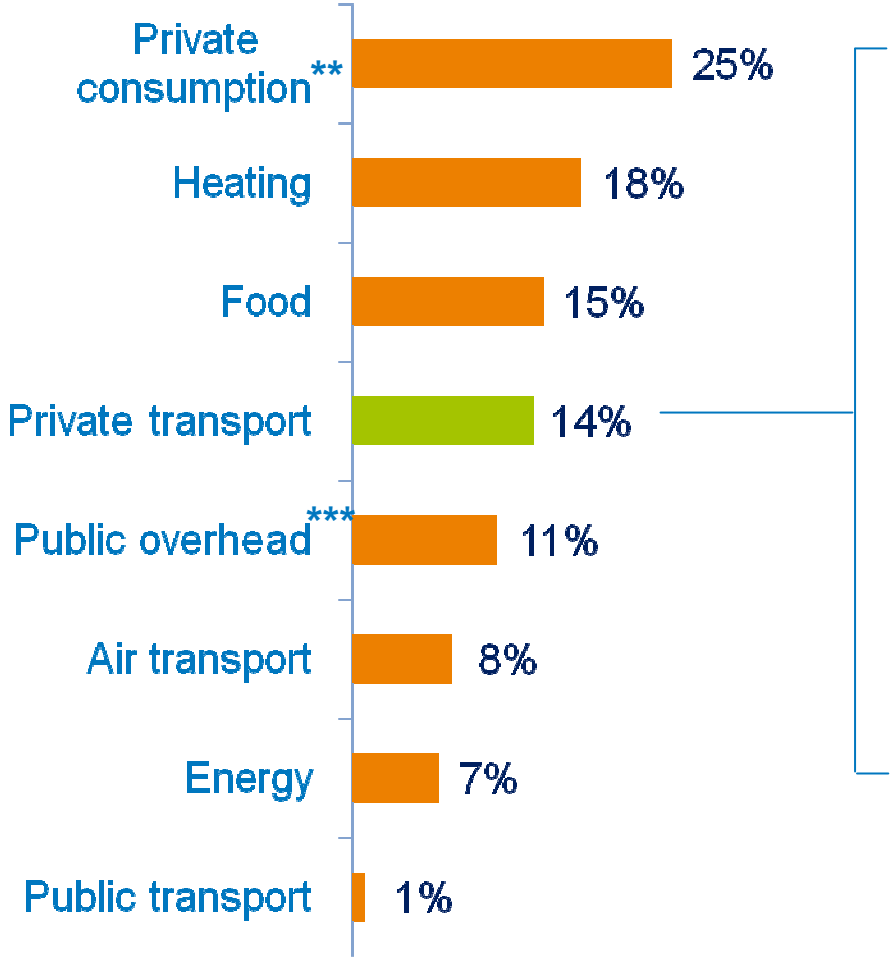
TIM TUHH

In daily routines, a private person can easily influence car emissions, while other emission sources are more difficult to affect

Average German carbon footprint, 2009 *



Did you know?

In order to generate the same impact than offsetting the **annual car emissions** an average German car driver would need to spend …

… 6 years without warm water*

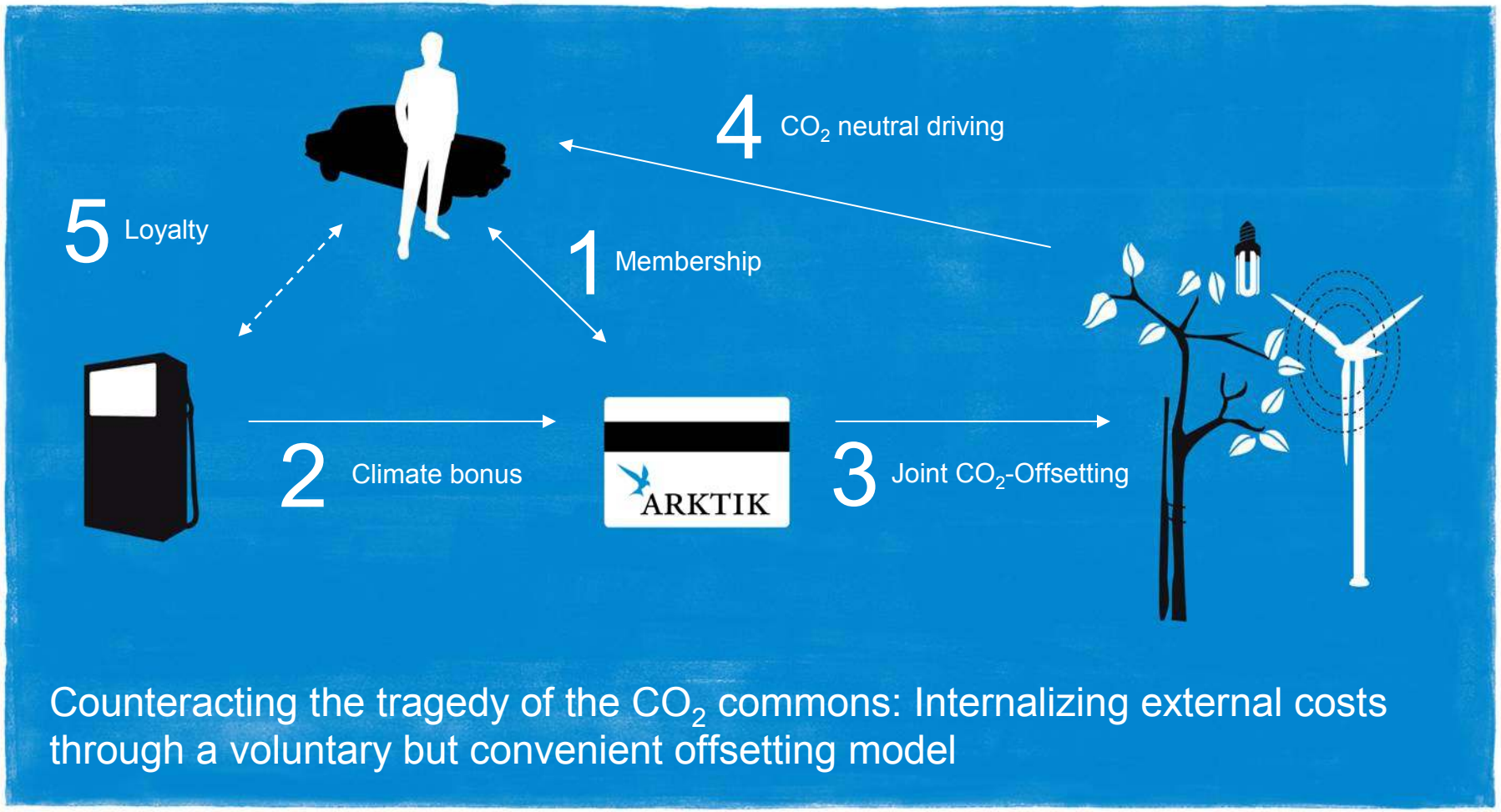
… 20 years without electric light*

* Ø annual energy consumption of single household for lighting and warm water (VDEW); ** private consumption includes purchase of convenience products, food but also a new car; *** public overhead means emissions resulting from governmental investments distributed equally among all German inhabitants.
Data for calculation of carbon offsetting potential based on Bavarian Federal Environmental Agency; Source: German Federal Environmental Agency (2009)

ARKTIK is model to integrate CO_2 offsetting into the daily routines of car drivers

- A model for everybody who **needs** to drive a car
- 100% offsetting **precisely** based on actual fuel consumption
- Automated, directly **at the fuel station**
- **Convenient** solution comparable to usage of other debit- or credit-cards (socially accepted)
- Leveraging **strategic buying power** of car drivers for subsidiaries of offsetting costs
- Allows car drivers to take responsibility of CO_2 emissions by **internalizing negative effects** of car usage
- A **temporary solution** until e-mobility is available on a large scale
- **Externally certified** offsetting process (TÜV Nord)

ARKTIK is an innovation for sustainable mobility integrating related stakeholders into a system facilitating climate protection



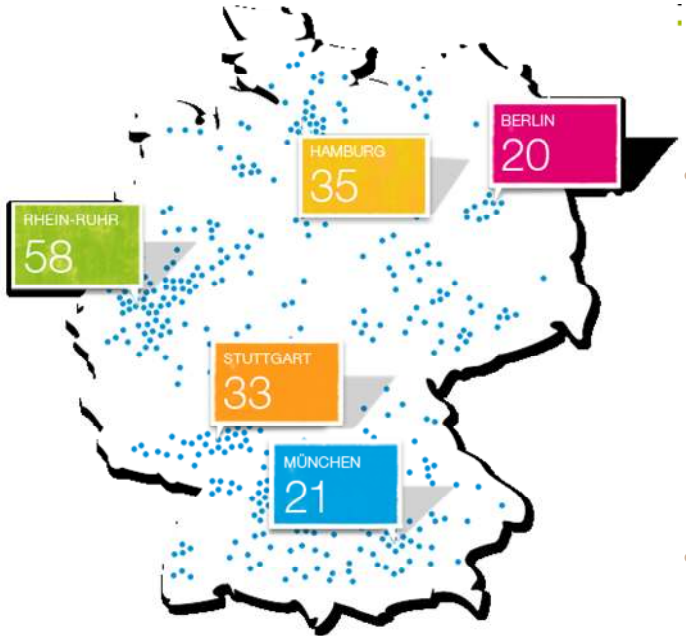
Counteracting the tragedy of the CO_2 commons: Internalizing external costs through a voluntary but convenient offsetting model

Hardin, G. (1968). Tragedy of the Commons. Science, 162, 1243-1248.
Coase, Ronald H. (1960). "The Problem of Social Cost". Journal of Law and Economics 3 (1): 1–44

After market launch in December 2009, ARKTIK started to attract customers all across Germany

ARKTIK fuel stations across Germany

As of March 2010



- **Coverage of fuel stations:**
  - ~10% of German fuel stations (~530), primarily in urban areas
  - ~30% expected (~2.700 stations) by June 2010
- **Partnerships:**
  - Recommended by B.A.U.M. e.V. – German Environmental Management Association
  - Largest German car magazine (Auto BILD) is officially offsetting all test drives with ARKTIK
- **Extensive media attention e.g. in**
  - TV/Radio: 3sat, VOX, NDR Info
  - Press: TV TODAY, Stuttgarter Zeitung, Sonntag Aktuell, Bild, Weser Kurier online, SPIEGEL ONLINE, TV Spielfilm, Auto Bild, SR online.de, WAZ, Motorrad-fahrer, shz

The ARKTIK model was developed in 2008 based on extensive insights from climate sensitive users

Quantitative survey of car drivers

- Market survey of **1.000 car drivers**
- During Summer 2008
- Representing the population by age and sex
- Questionnaire conducted through online-panel of market research agency

Addressing the question:
What do customer prefer?


ARKTIK

DER ARKTIK REPORT 2008
EINE REPRÄSENTATIVE STUDIE ZUM KLIMANEUTRALEN HANDELN VON AUTOFAHRERN IN DEUTSCHLAND

- The ARKTIK Report provided a comprehensive facts validating the potential of ARKTIK and was used to identify critical customer preferences

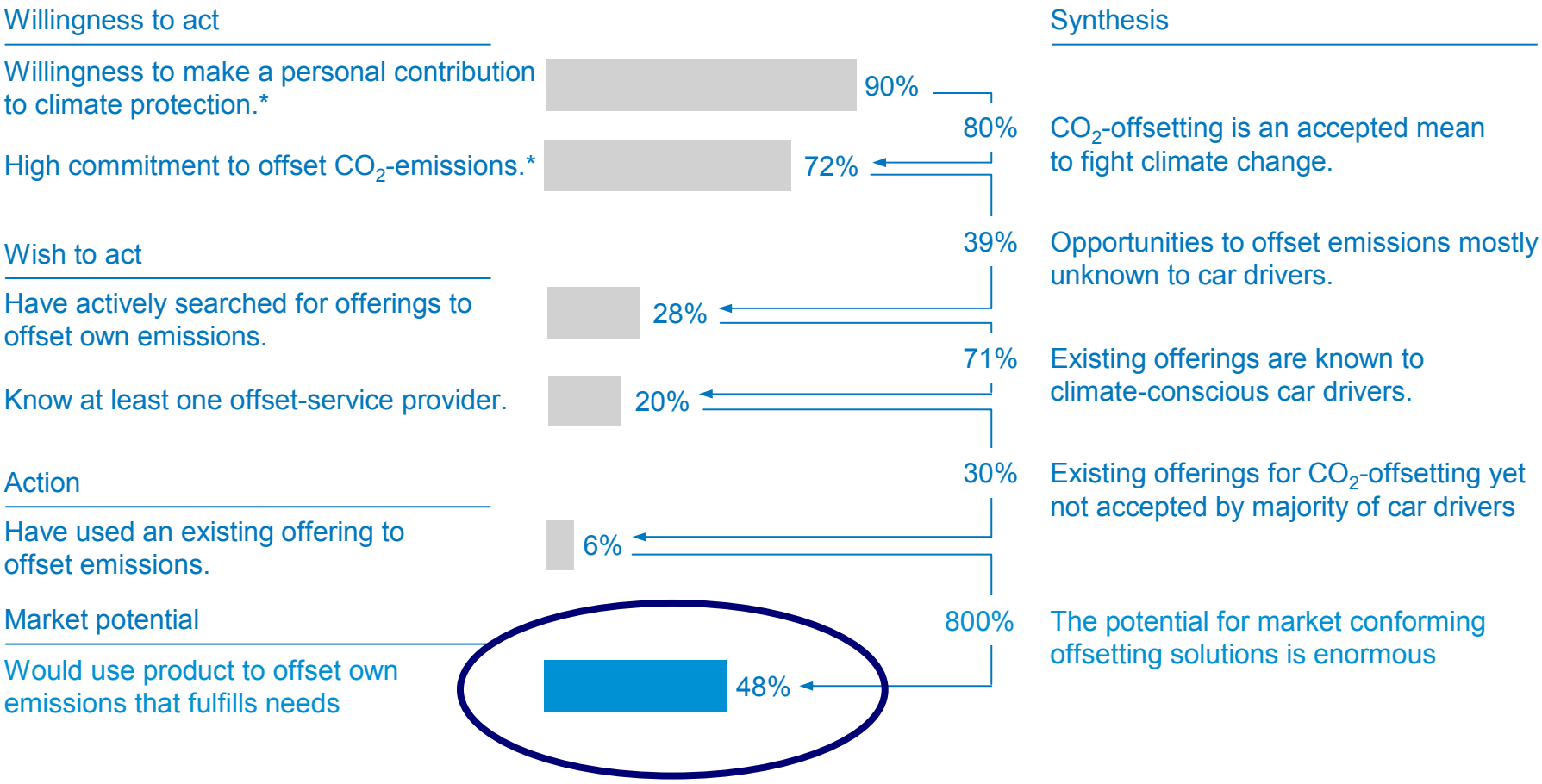
Creativity workshops

- 6-8 participants with affinity towards 'biological' products
- Conducted by renowned depth-psychologists

Addressing the question:
How to address customers?

The study revealed that a large share of car drivers would offset CO_2 emissions if an adequate solution would be available

Representative survey (n=1.000 German car drivers), 2008



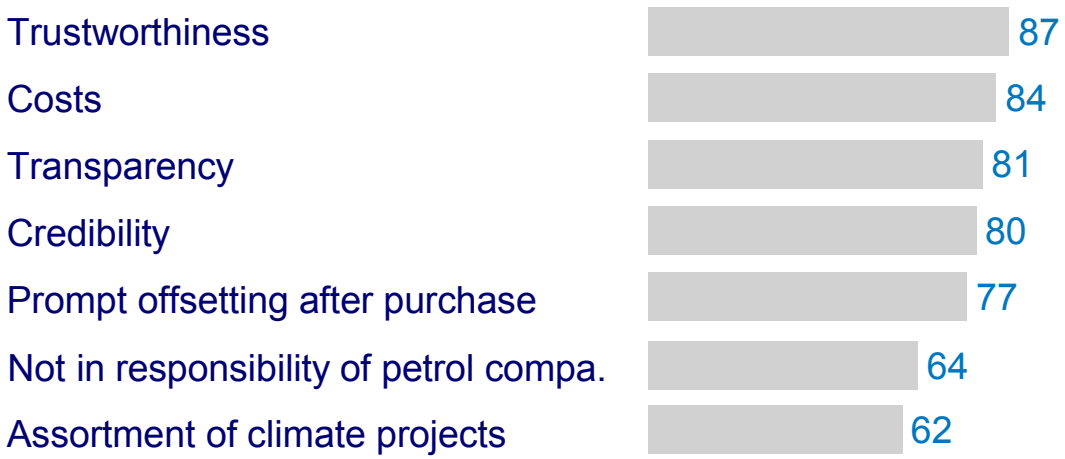
*Top 2 answers: “definitely", “probably"
Source: ARKTIK Report

To develop an integrated solution ARKTIK identified critical customer preferences

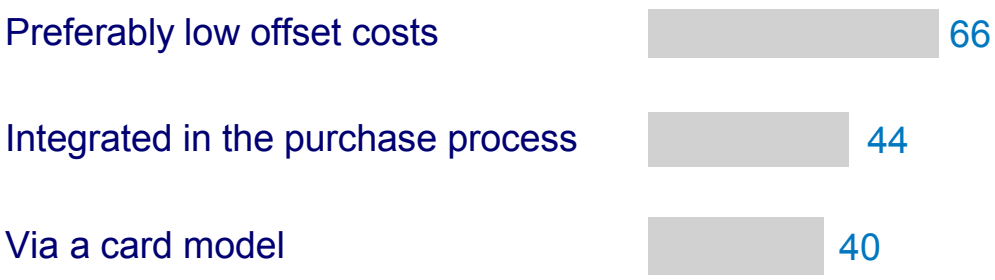
Relevance ranking of factors that are important for car drivers in choosing compensation models

Percent, Top Boxes, n = 697*

How important are the following factors for your choice?



Which factors motivate customers to switch the fuel station?



- Representative study of 1.000 car drivers
- In depth customer and creativity workshops

* Car drivers stating to compensate CO_2 emissions "likely" or "most likely"
Source: ARKTIK Report

For flight bookings the online model is most convenient, but hardly suitable for fuel consumption at fuel stations

	Existing offsetting models		ARKTIK
Preference criteria of customers **choice** *	Air travel Online at ticket purchase	Car Online calculator	Car ARKTIK
Simultaneously at purchase	☑		☑
Integrated in purchase process	☑		☑
Without extra efforts	☑		☑
Optional usage / Choice at each purchase	☑	☑	☑
Precisely based on actual consumption			☑
Transparent and trustworthy	☑	☑	☑
Tangible experience in everyday life			☑
Observations:	Online booking is an established model to compensate. E.g. 8% of all online ticket purchasers compensate CO_2 emissions.**	The internet is the least preferred model for car drivers. * But: Online calculators are hardly convenient for offsetting car emissions.	ARKTIK represents a customer oriented model. **45%** would prefer those petrol stations that offer offsetting with a product such as ARKTIK.*

Sources: * Customer and expert interviews, ARKTIK Report, 2008; ** e.g.. Austrian Airlines, TUIfly

Leading climate experts approve and support the ARKTIK model

"I am a member of ARKTIK, although I do not drive a car anymore. Offsetting CO_2 emissions from cars has the potential to become a valuable tool for everyday's climate protection along with offsetting emissions from air travel and clean energy."

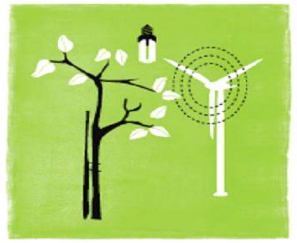
Prof. Dr. Hartmut Grassl
Former Director at the Max Planck Institute for Meteorology

ARKTIK has implemented user preferences in its offsetting model

1

~50% cost sharing

Offset charges precisely calculated based on actual customer consumption*



2

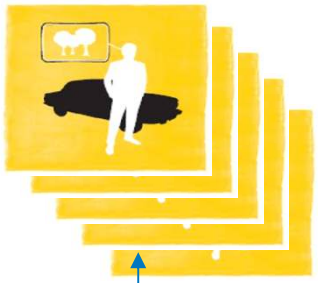
Monthly fixed membership fee

Two factors are key to the credibility of the ARKTIK model

1. Transparent and independent pricing (offsetting charges are strictly separated from fees)
2. No benefits for ARKTIK from fuel consumption

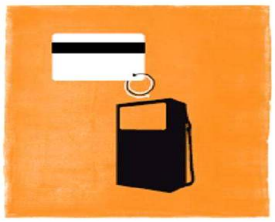
* The offsetting process is certified by TÜV Nord

All elements translate into an integrated system innovation to facilitate sustainable mobility



1 **~50% cost sharing**

2 **Integrated in the ‘classical’ purchase process**



3 **Joining forces with neutral institutions**

- **Externally certified by TÜV Nord**
- **Partnering with NGOs**
  e.g., B.A.U.M. e.V. – German Environmental Management Association
- **External constant exchange with leading climate experts**
  e.g., from Max Planck Institute for Meteorology

4 **Strong company values**

- Using only GoldStandard VERs
- Fair, transparent, independent
- Trustworthy and credible
- Commitment to convenience

5 **Leveraging buying power to purchase VERs**

6 **Partnering with leading offset firms**
e.g., FirstClimate, an international integrated carbon asset management company

The ARKTIK model creates mutual benefits for all stakeholders

The climate

1. Internalization of external costs
2. Raised awareness among German car drivers leading directly to CO_2 conscious driving and direct CO_2 reduction

Car drivers

1. Exact and consumption equivalent CO_2 offsets
2. Convenient way to offset CO_2 emission integrated in ‘classical’ purchasing process
3. Cost sharing with cooperating oil companies
4. Joining forces to leverage strategic buying power to generate offsetting subsidies

Cooperating oil companies

1. Leverage of existing fuel card models and loyalty card infrastructure allows quick implementation of ARKTIK model
2. Climate engagement as means to participative responsibility

Future steps – Challenges for growing the ARKTIK model

1. For policy makers
    1. In Germany offsetting is often recognized to much as “selling of indulgences”. ARKTIK and other stakeholders should promote it as taking responsibility for internalizing external costs

2. For ARKTIK
    1. Winning further cooperation partners to extend market coverage and to increase the convenience for customers
    2. Developing complementary products (e.g., pre-paid cards, loyalty models)
    3. Developing other products to which precise consumption equivalent offsetting can be translated (e.g. printing)
    4. Focusing on specific models for B2B customers
    5. Expanding into new markets, e.g. Austria, Switzerland, USA, …

Thank you for your attention!

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