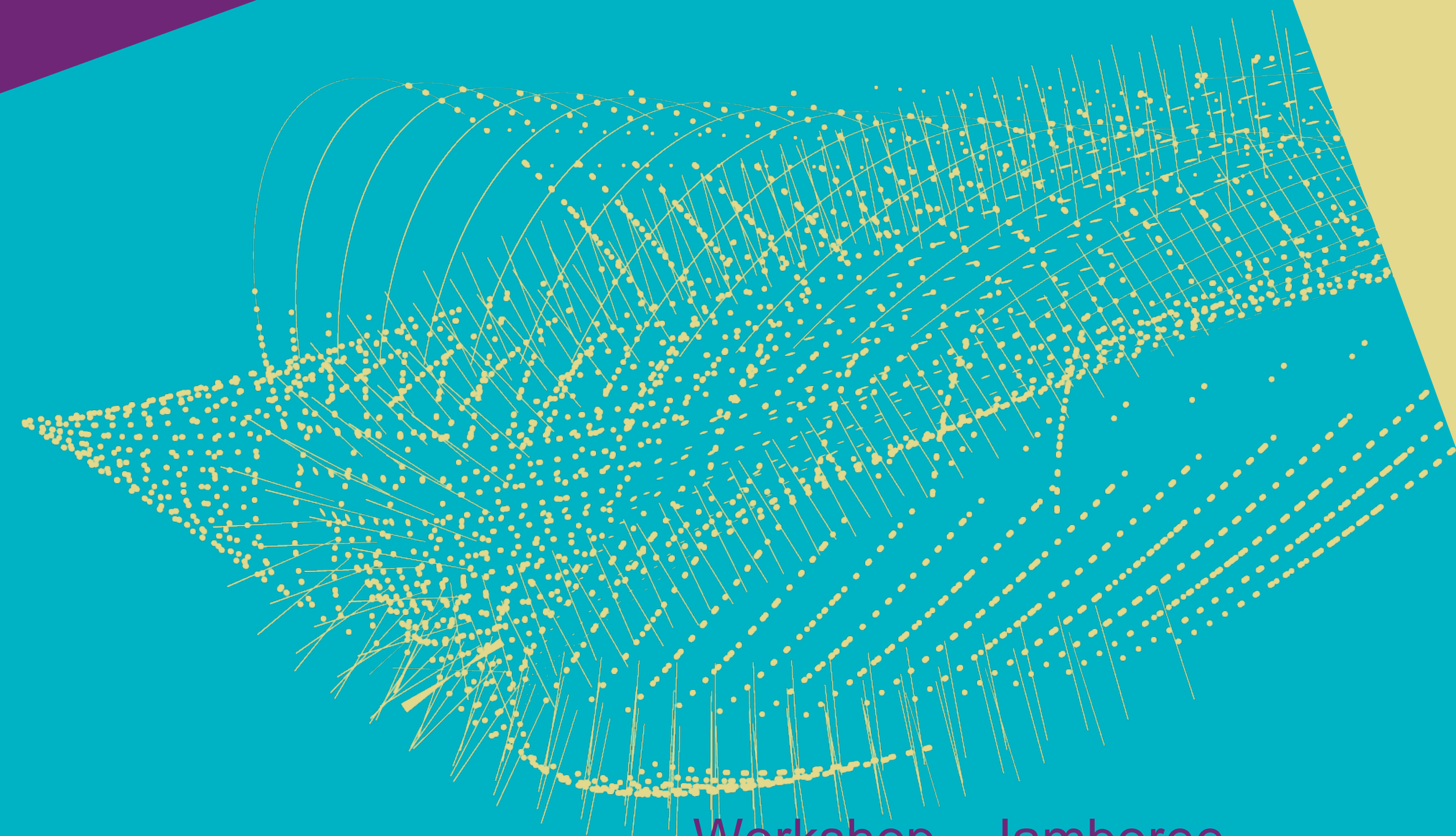


Nikhef



Workshop - Jamboree  
9 May 2022

Arjen van Rijn, Jan Visser, Jesse  
van Dongen, Niels van Bakel,  
Sascha Caron,

SUSTAINABILITY

# PROGRAM

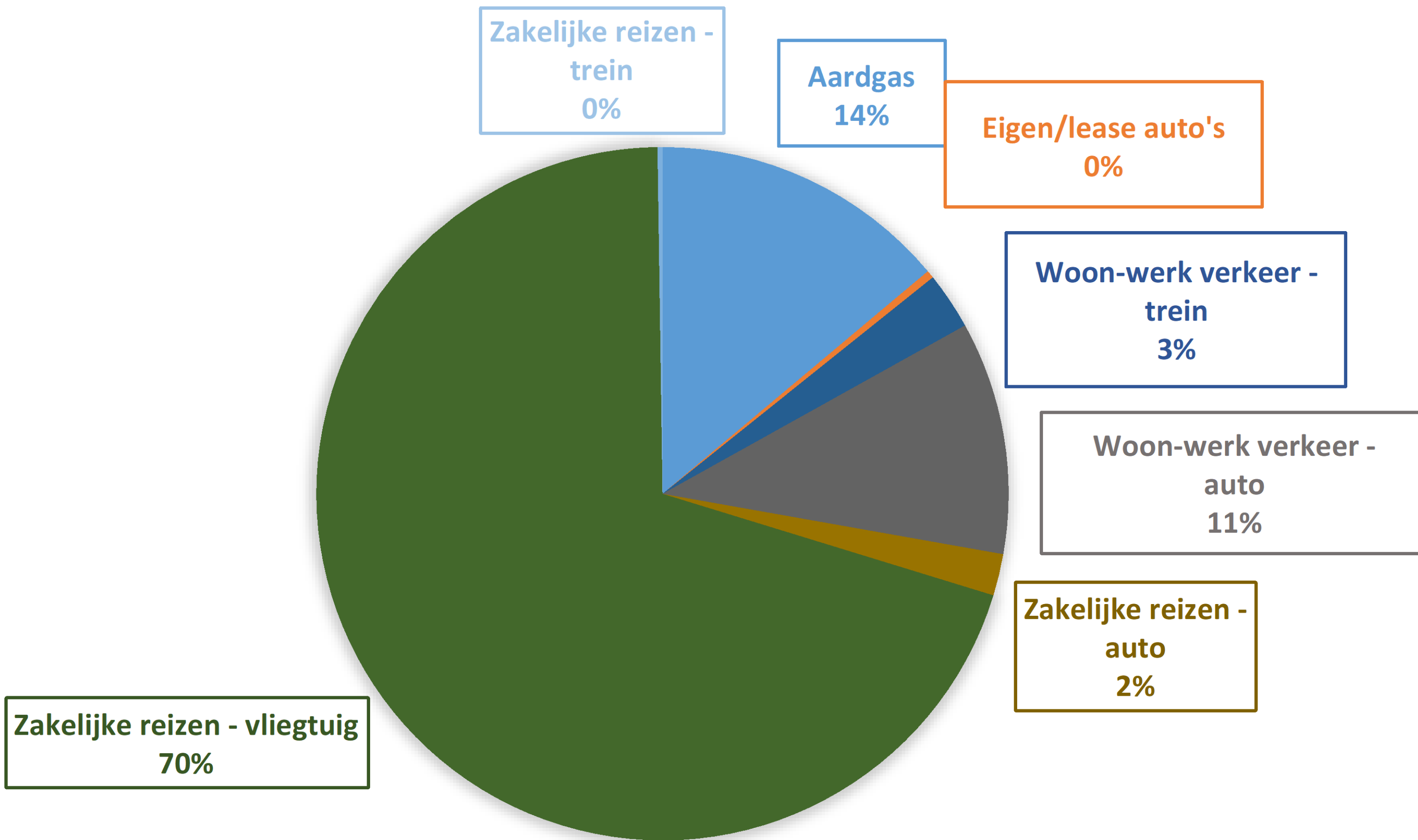
10': Introduction to Nikhef's carbon footprint and sustainability  
Roadmap - Arjen

25': Travel and conferences: can we change?

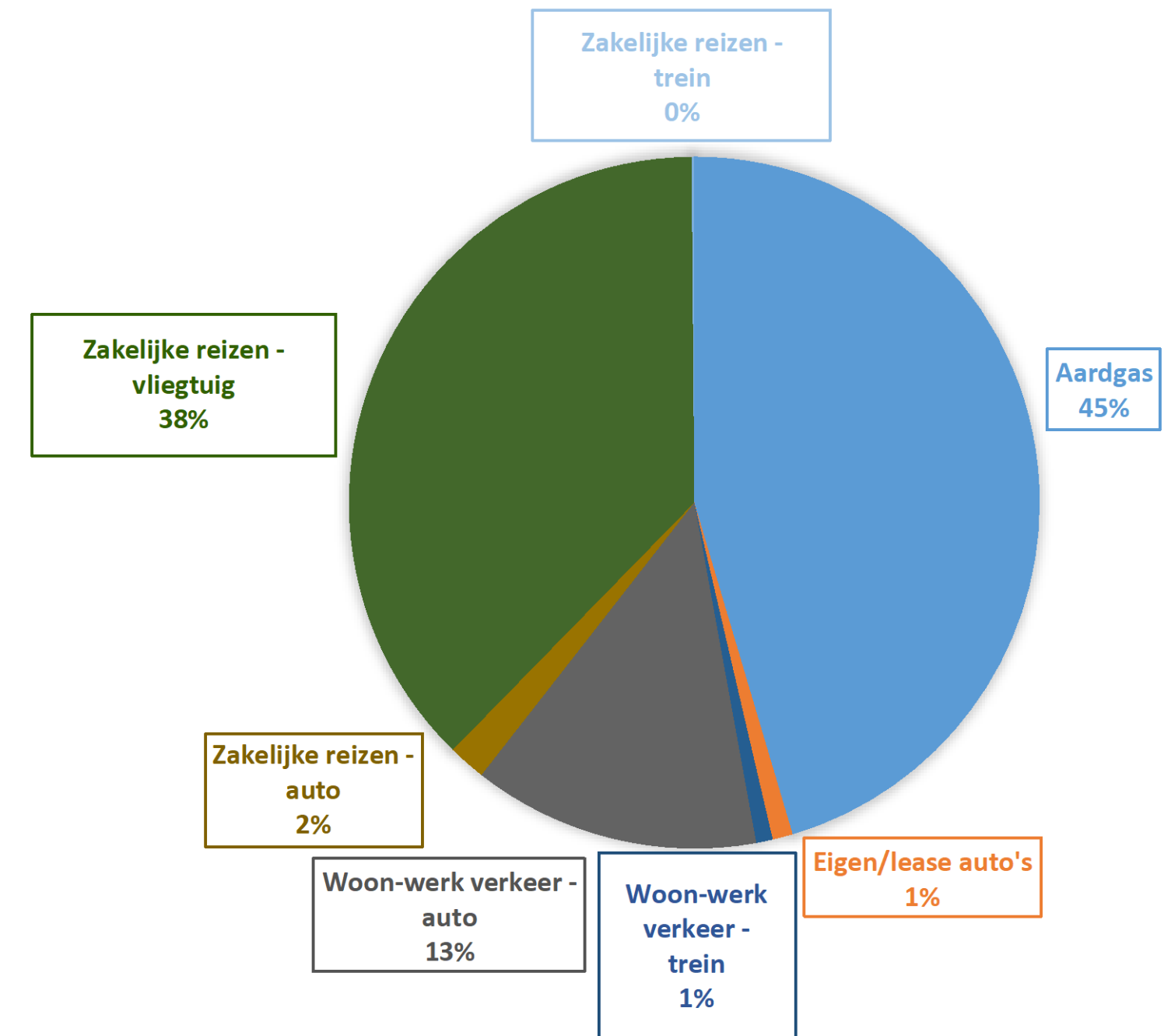
10': Sustainable signal and data processing: what can we do? –  
Sascha

We will use Mentimeter during the session.  
Go to [Menti.com](https://menti.com) and submit: 5437 9605.

# NIKHEF'S CARBON FOOTPRINT



2019: 1.100 ton



2020: 400 ton

# SUSTAINABILITY @ NIKHEF

Goal: climate neutral in 2030.

Roadmap Sustainable Nikhef; five action lines:

- Diminish energy consumption: building (renovation) and ‘primary process’ (research activities) e.g. computing;
- Mobility: in particular less travel by air; *‘less planes, more trains’*:
  - Target: 50% reduction by 2025 (compared to 2019)
- Waste management: tie to initiatives on the Amsterdam Science Park;
- Attitude and behavior;
- Primary process: ‘sustainable (astro)particle physics’

Current status of the Roadmap:

- Discussed with Works Council; we have answered many questions;
- Works Council has advised positively; recognizes the priority to start with ‘mobility’; advises to address the following 4 issues:
  - How to handle frequent travel?
  - How to increase awareness?
  - How to facilitate sustainable travel to popular destinations (like CERN);
  - How to form a ‘pilot’ group of sustainable travelers? **We need volunteers !!!**

# SUSTAINABILITY

Common topics (for all NWO-institutes):

- **Travel policies:**
  - travel less -> travel differently -> travel efficiently -> compensate;
  - may require changes in 'UVR' (labor regulations), such as 1<sup>st</sup> class train travel, direct flights;
  - tips & tricks for travelers to lower barriers for sustainable travel options;
  - monitoring: feed (financial) system with adequate data on travel (mode, destination, etc.);
    - Needs follow-up!
- **Procurements;**
  - Use guidelines (available nationally) for sustainable procurement ('MVI criteria tool');
  - For Nikhef: let's define some pilot projects;
    - First pilot: we have 'sustainability' included in the tender for our new furniture;
- **Compensation;**
  - NWO-Institutes plan to collectively procure compensation projects (2023-2024);
    - Procurement ongoing

# FIGURES ON THE AVERAGE (A)PP SCIENTIST

	CO2 equivalent (person/ton/year)
Average person in Europe	10
Business travel (A)PP scientist (Nikhef 2019: 3,5 million km by plane, divided by 100 staff scientists)	6,9
CERN LHC+experiments (750 TWh; nuclear energy: 50 gr/kWh)	3,8
Emission of other green house gases (SF6 etc.)	10
Computing / data processing (100 GWh, 'gray' energy mix of 660 g/kWh)	6,6
Eat vegetarian, drive electric (or not at all), use renewable energy, consume less;	-5

(inspired by Sascha – jamboree 2019, assuming 10.000 active (A)PP scientists, updated with figures from Jesse)

# MENTIMETER – 5437 9605

How much (in ton CO2 per year) does Nikhef's scientific datacenter currently contribute to Nikhef's carbon footprint?

[Enter a figure]

# MENTIMETER - 5437 9605

What is the CO<sub>2</sub> emission per person of one direct flight from Amsterdam to Geneva?

1. ~5 kg CO<sub>2</sub>
2. ~30 kg CO<sub>2</sub>
3. ~180 kg CO<sub>2</sub>
4. ~350 kg CO<sub>2</sub>



# MENTIMETER - 5437 9605

How much CO<sub>2</sub> can one fully grown tree compensate per year?

1. 1 kg CO<sub>2</sub> per year
2. 20 kg CO<sub>2</sub> per year
3. 100 kg CO<sub>2</sub> per year
4. 250 kg CO<sub>2</sub> per year

# TRAVEL AND CONFERENCES

# MENTIMETER - 5437 9605

I fully recognize the issues sketched in this video. Nikhef should lobby hard to have the next global HEP or APP conference organized in a multicontinental, hybrid form.

1. Totally agree
2. Totally disagree
3. Don't know

# ALTERNATIVE TRAVEL – HOW EASY IS THAT?

## Amsterdam - Geneva

Mode	Cost (€/person)	Duration (h)	CO2 emission (kg/person)	CO2 Compensation price (as offered by airline)	Compensation based on current carbon permit price of ~ €80/ton
Plane (economy)	50 - 100	3 - 4	172	~1,5	14
Car on gasoline (2 persons)	100	10 – 12	134 (268/2)		11
Train (TER)	130 - 180	8,5 - 11	26		2

<https://ecotree.green/nl/>

Travelling by plane is still perversely cheap ...

# TRAIN TO GENEVA: OPTIONS

## Full day:

- Thalys & TGV via Paris (change with RER) 7 – 9 hrs
- IC via Basel & Biel (2-3 changes) 10 – 11 hrs

## Night train

- IC via Basel & Bern (2 changes) 20:30 – 9:20 13 hrs

## Two stages

- Evening Thalys to Paris 3,5 hrs
- Morning TGV to Geneva 3,5 hrs
- Cost for hotel in Paris

# MENTIMETER - 5437 9605

I am prepared to use the train when going to a European destination, even if this means adding two days to the business trip duration.

1. Yes
2. No
3. Don't know yet

# MENTIMETER - 5437 9605

Nikhef should forbid anyone to travel to CERN for a one day meeting.

1. Yes
2. No
3. That depends ...

# THOUGHTS ON TAKING THE TRAIN

- I want to be home the weekend
  - Planning of meetings in our community may need to be reconsidered
- Traveling on a Sunday evening is no problem sometimes
- There is plenty of work to collect to do on the train
  - Read, write, think, ...
- A full day is too much, but splitting the trip in two stages can work
  - Increases costs



# MENTIMETER - 5437 9605

In order to reach its sustainability goal of 50% less travel carbon footprint in 2025, Nikhef should simply reduce the travel budget with 50%.

1. Yes, this is a clear method to reduce travel.
2. No, not as long as sustainable travel is more expensive.
3. Don't know.

# SUSTAINABILITY AND SIGNAL PROCESSING

[Sascha]

# SUSTAINABILITY

Reaching sustainability goals will require dedicated, consistent and long term attention. It will certainly mean changes in the way we work.

We appreciate your feedback! Send it to me: [avr@nikhef.nl](mailto:avr@nikhef.nl).