**Pre-assignement IP-Belgium**

**Introduction**



Today already, we globally face several challenges caused by global warming and other environmental issues. If we don’t act now, these problems will only get worse and will take uncontrollable dimensions.

To step up to these challenges, there are worldwide tons of initiatives to bring down our global footprint with a focus on CO2-emissions in particular.  
  
By participating this IP-week, you’re also contributing to one of these projects. The goal of our project is to generate an online course that will contribute to the general knowledge of the transport sector and the awareness of urgency in moving towards a more sustainable eco-system.

A diagram of a greenhouse gas emission

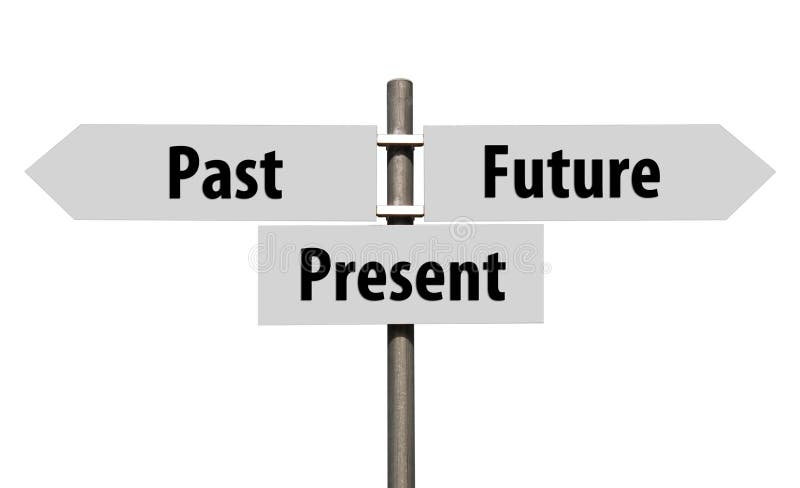
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As the transport sector is an important contributor to these emissions, it must be transformed drastically to bring down its negative impact on the environment.

**Sustainable use Hydrogen**

The transport sector plays a pivotal role in global sustainability efforts. With the increasing concern over greenhouse gas emissions, the need for sustainable transportation solutions has become paramount. One promising avenue for achieving this sustainability is the integration of hydrogen as an energy carrier in the transport sector.

While still using fossil fuels, we aim for green energy. Where do we stand now and how was it 10 years ago? What er the advantages and disadvantages for hydrogen use in the transport sector compared to using fossil fuels and battery electric vehicles.

During this *IP – Sustainable Transportation,* you will be working on several topics to identify the sources of hydrogen, which are everchanging.

  
We would like for you, for each topic, to look some years back, to look at the current situation and make a prediction of the future developments.  
During the pre-assignment you will be focusing on the (recent) past & present, during the IP-week and the post-assignment you will focus on the future situation.

**Outcome of the assignment**

Always keep in mind that the outcome of your assignment should be educational material that can be bundled into an interactive online course for other students.  
So make sure that you provide the right type of information like graphs, numbers, pictures, short movies, ….



***Sources***

List, in a very detailed way, the sources of the information you’ve used.

The downloadable documents you store in the Teams-folder.

**Your assignment**

**Evolution of the price of hydrogen use in transport sector**

How have the prices of hydrogen vehicles changed over the past few years? Has there been significant changes in price? What’s an average cost per km for a passenger and heavy duty vehicle propelled by hydrogen.  
If we ever want to know if hydrogen powered vehicles are the “solution” to our pollution problem, price is an important argument. People will always ask the question: “What will it cost me?”

**Evolution of the amount of hydrogen being used**

How much hydrogen is currently being used in the transportation sector? Did we see an incremental increase in use the last years?

**Evolution of the network**

How many hydrogen fueling stations are there between countries in Europe? What is the total capacity of these stations. How long will a refueling take? Can we refuel constantly or is there some time needed between refueling?

**Cost calculation for a company**

How do the total cost of ownership (TCO) and operating costs of hydrogen-powered vehicles compare to traditional diesel vehicles? Make a calculation for a company’s vehicle fleet if they would transition from fossil fuels to al Hydrogen powered vehicles. Do this for a company using passenger vehicles and a company using heavy duty vehicles.