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RENEWBILITY III

OPTIONS FOR A DECARBONISATION OF THE TRANSPORT SECTOR UP TO 2050

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STARTING POINT FOR THE PROJECT

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Climate summit in Paris in 2015: GHG emissions have to be reduced in the second part of the century to net zero emissions globally.

But: a full decarbonisation is not feasible in all sectors. For example, in agriculture natural limitations exist for a total reduction of GHG.

This implies that energy-related emissions need to be reduced to zero by 2050 – also in the transport sector.

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BUT: NO REDUCTION OF CO_2-EMISSIONS SINCE 1990

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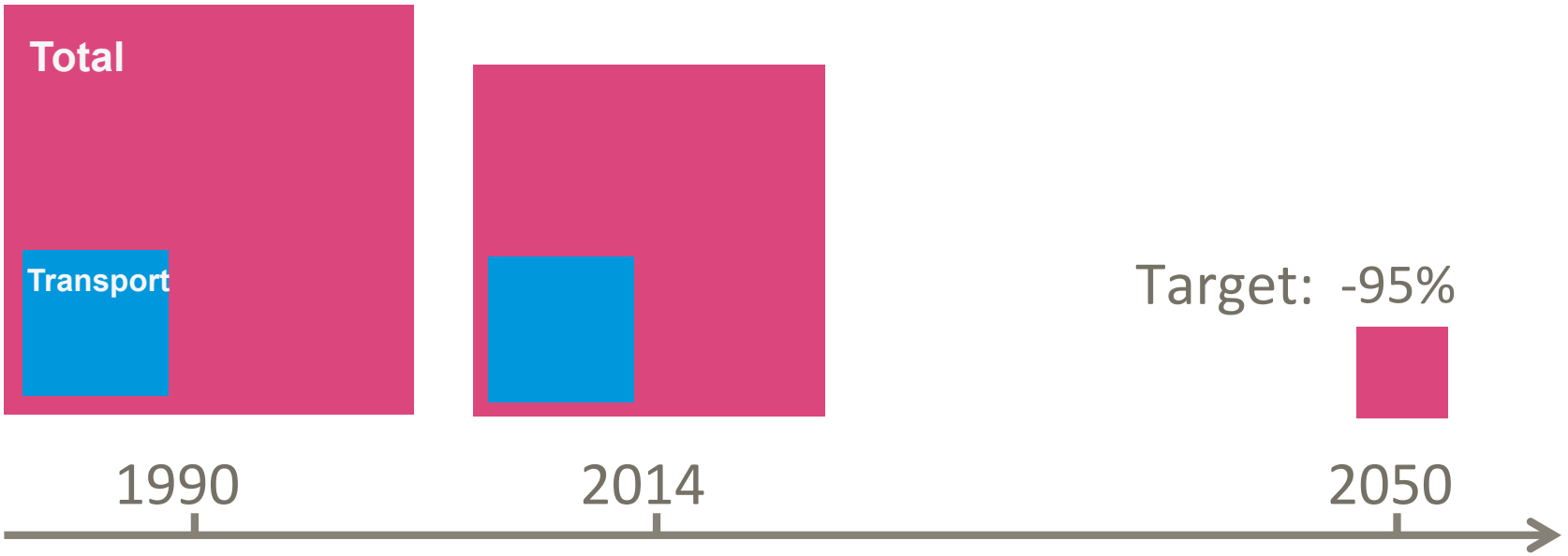
Illustration of GHG-emission in Germany



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Quelle: eigene Darstellung nach ZSE-Daten und Zeitnahprognose des Umweltbundesamtes

THE PROJECT “RENEWBILITY“

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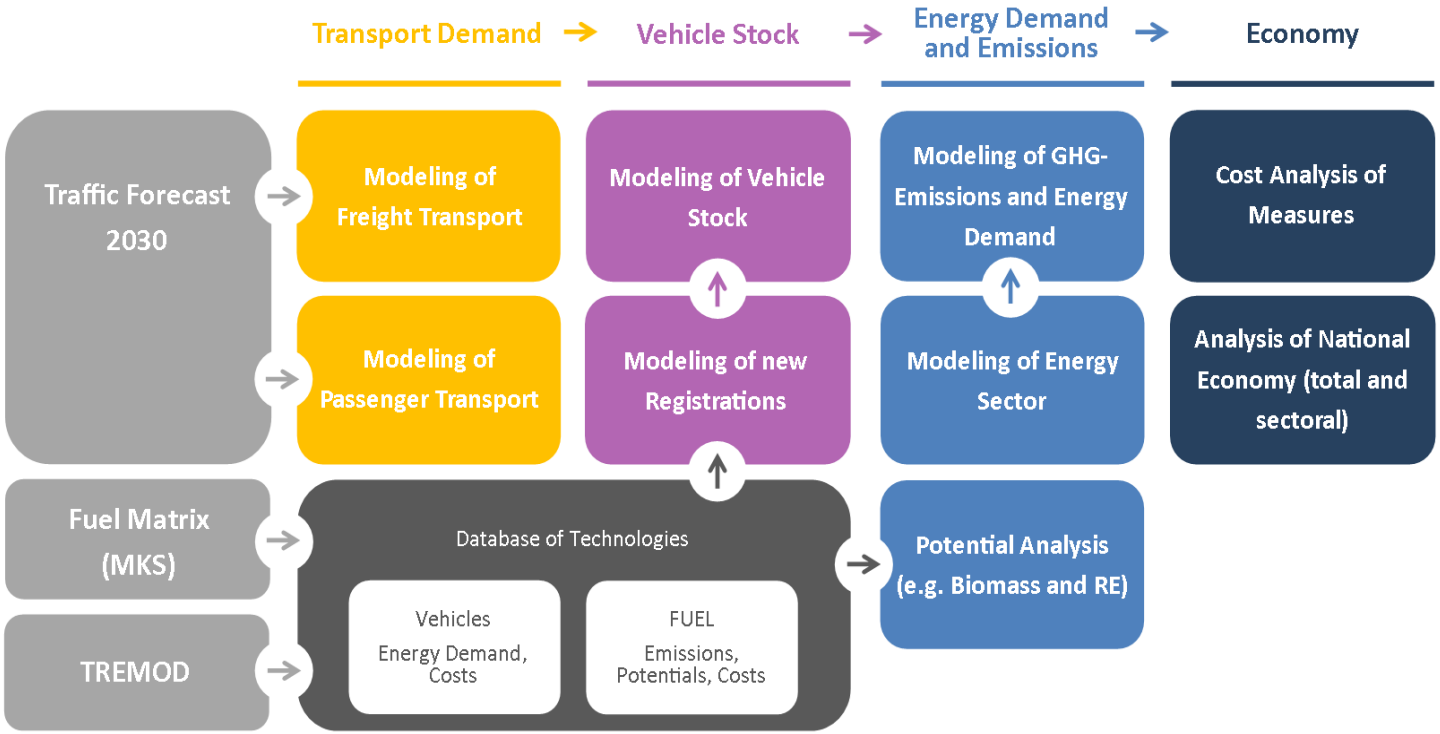
Scenarios up to 2050 for the German transport sector based on models estimating future vehicle stock, transport demand, energy demand, CO_2-emissions and economic effects

All scenarios faces a 100%-decarbonisation in 2050

We compared them to a baseline scenario



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RENEWBILITY: STAKEHOLDER PARTICIPATION

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In the course of the development of an integrated strategy for a sustainable mobility a participation of stakeholders was considered essential.

Our project combined a stakeholder participation process with the scientific development of scenarios.

Due to the participation of the design of the scenarios takes into account the points of view and interests of different groups.

Scenario-group was composed of representatives of the automotive, train, energy and logistic industry as well as of environmental and consumer protection associations

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RESULT 1:
ELECTROMOBILITY IS AN ESSENTIAL PILLAR

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Technical efficiency enhancement and the use of renewable energies are of special importance for climate protection in the transport sector.

We compared two different scenarios:

1. The “Efficiency” scenario assumes an ambitious adjustment of the CO_2-standards for passenger cars as well as the introduction of overhead lines on motorways for lorries.
2. Sensitivity-scenario “Focus Fuels” assumes no further adjustment of CO_2-standards and no trolley-trucks, CO2-reduction mainly by power-generated fuels, only the additional costs for power-generated fuels drive the demand for more efficient vehicles.

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POWER-GENERATED FUELS ARE NOT THE SOLUTION

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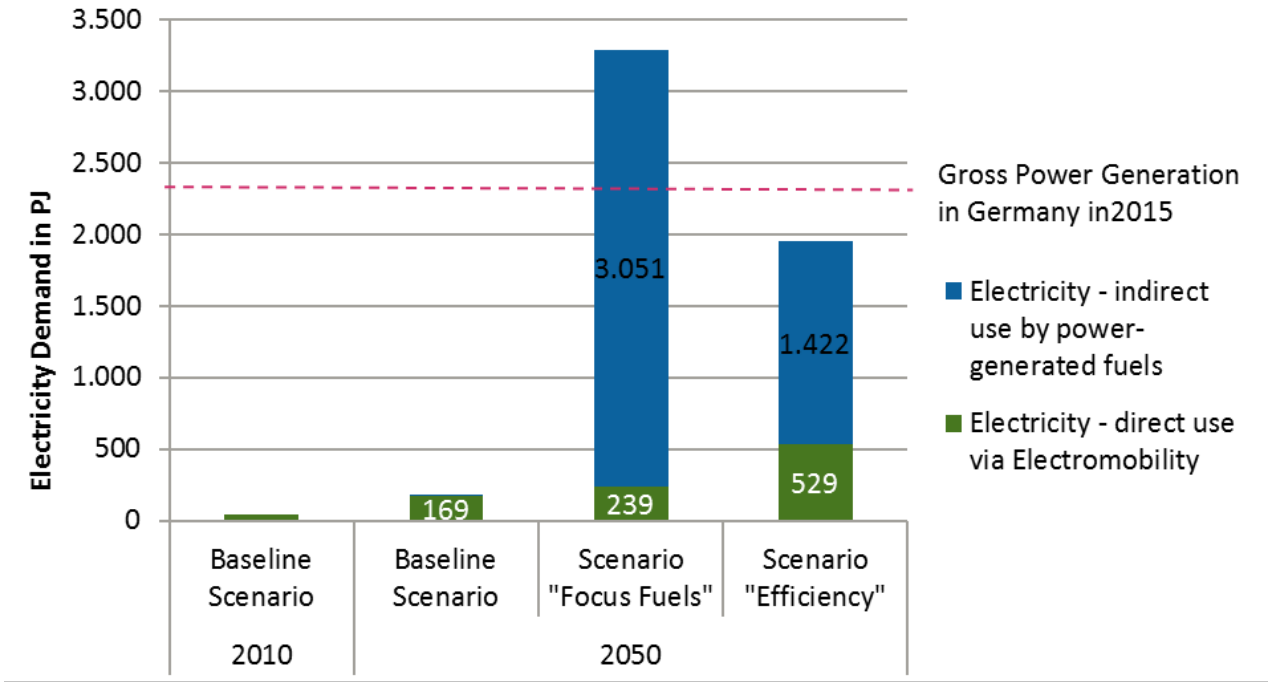

- Direct use of electricity is key.
- Power-generated fuels should be used only if no other option exists – as expected in air and maritime traffic.
- Government have to force the face out of internal combustion engines by political measures, mainly by an ambitious adjustment of CO2-standards.

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RESULT 2: NOT ONLY TECHNICAL SOLUTIONS SHOULD BE ADDRESSED

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“Efficiency plus”: In addition to the electrification of vehicle this scenario contains a set of measures to promote a modal shift and to improve quality of life in cities:

- improved local area supply and a stronger land-use mix in the spirit of the "**city of short distances**" planning concepts,
- a country-wide introduction of **car sharing** in cities over 50,000 inhabitants and inner-city access **restrictions for polluting vehicles** in cities over 200,000 inhabitants.
- a large-scale expansion **of parking space management** with a substantial increase in prices,
- a **30 km/h speed limit** for all urban secondary roads and an
- increase in the attractiveness of **cycling and public transport** were assumed.

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TRANSPORT DEMAND IN URBAN AREAS IN 2050

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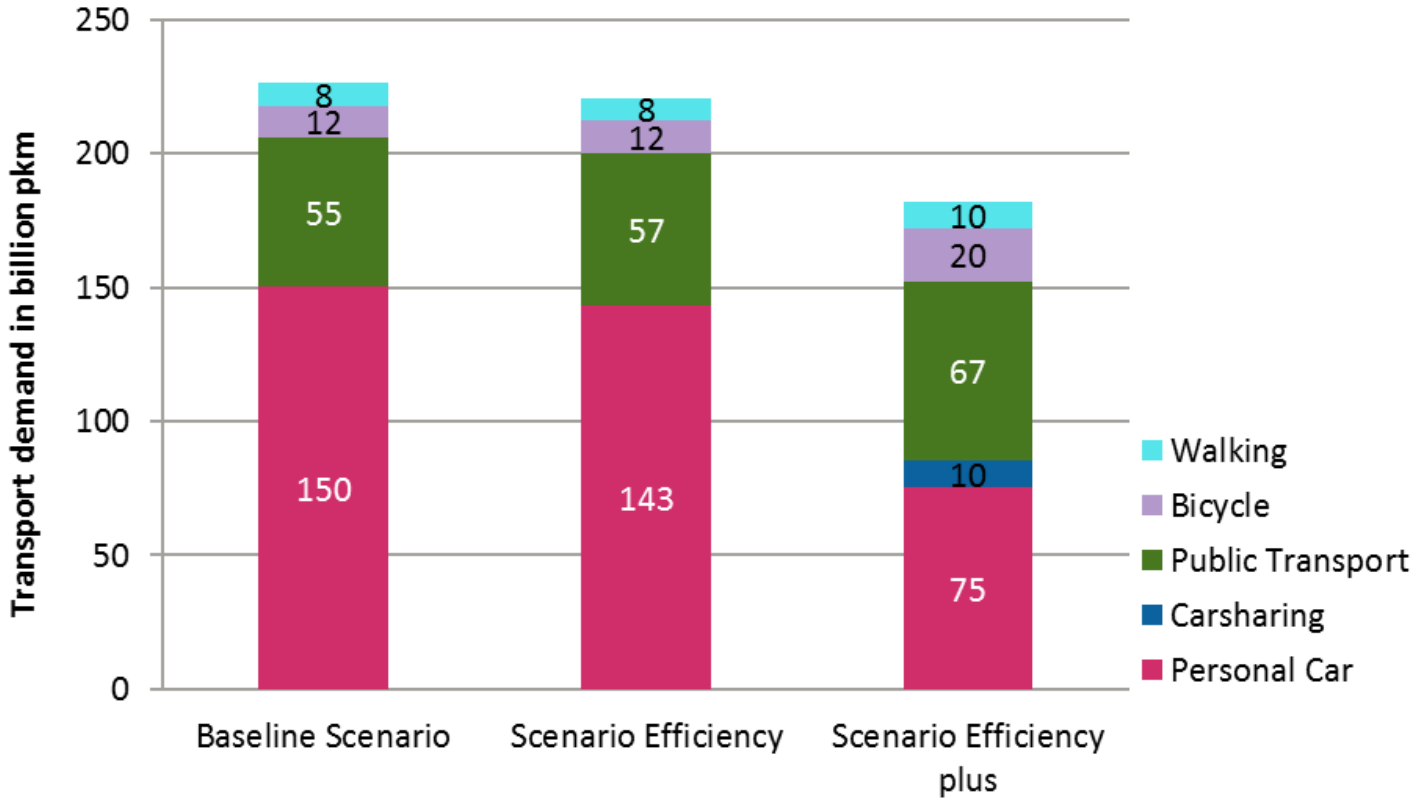

- Motorization rate in cities is lower by a third compared with the baseline.
- Reduction of urban passenger kilometres travelled by car by almost a half
- Distances covered by cycling, car-sharing and public transport increase in absolute and relative terms and account for almost 60% of passenger miles

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RESULT 3: ECONOMIC EFFECTS CAN BE POSITIVE IN 2050

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in bn. Euros compared to the baseline	"Efficiency" scenario	"Efficiency plus" scenario
GDP	0	5
Reduced external costs	17	18
Total	17	23

- Attaining the target of climate protection is possible without any significant losses in GDP
- Adding the impacts on external costs of the scenarios to the GDP impacts, an overall welfare benefit exists.
- Important: Germany and its industries have to keep up the technological know-how of today's production in the future. The vehicle manufacturing industry must remain competitive to be able to hold today's market shares.

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CONCLUSIONS FOR CLIMATE PROTECTION IN TRANSPORT SECTOR

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“Renewbility” demonstrates that a full decarbonisation of the transport sector in Germany is necessary and possible, with a positive economic balance

It is almost certain that a change in travel behaviour – which can particularly well be addressed in cities – and the use of electric vehicles are essential for an energy and economically efficient way to decarbonise the transport sector.

It is not a matter of knowledge but a matter of implementation!

Politics need to set up the framework: The transport system have to be transformed towards higher efficiency by means of modal shift, vehicle efficiency and transport demand reduction – there are by far not enough actions up to now

In order to achieve a full decarbonisation of the transport sector by 2050, transition processes in both society and industry need to be initiated as soon as possible.

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THANK YOU FOR YOUR ATTANTION

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