

Reaching climate protection goal through active cities



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Overview

1. Networks for sustainable development - take ICELI as an example
2. Examples of active cities for climate mitigation - Copenhagen
3. Introduction to Schwerin's past climate action
4. Vision: Schwerin in a world well below 2°C temperature rise
5. Milestone plan for Schwerin



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Local government networks for sustainable development

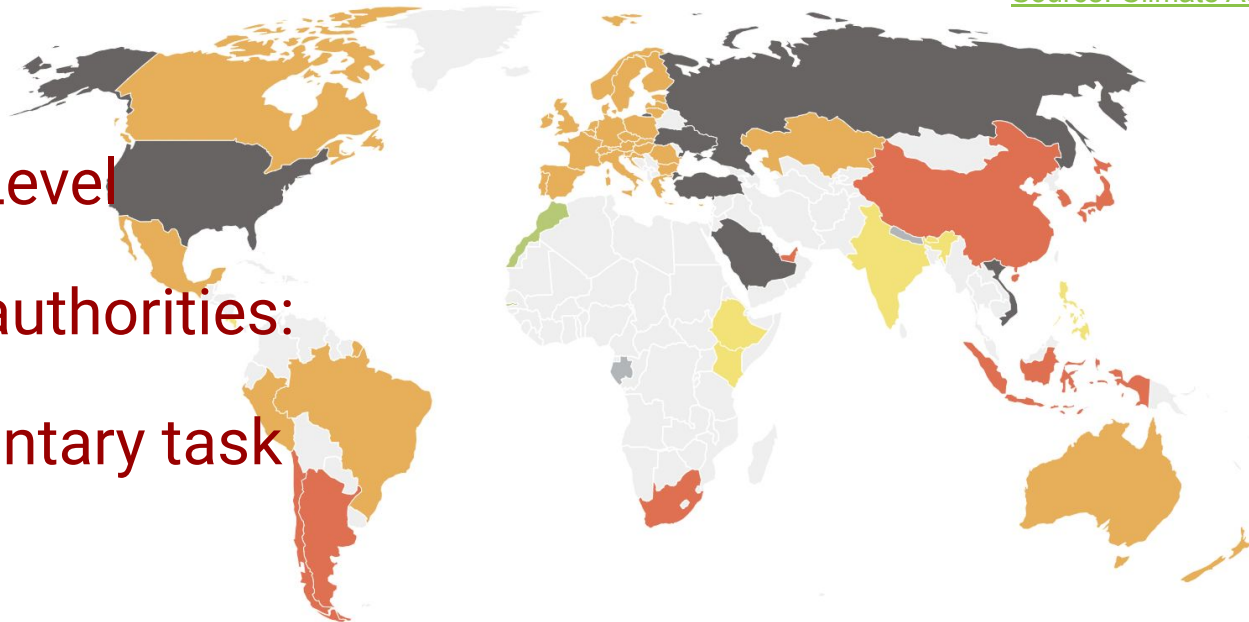
NDCs

[Source: Climate Action Tracker: Home](#)

National Level

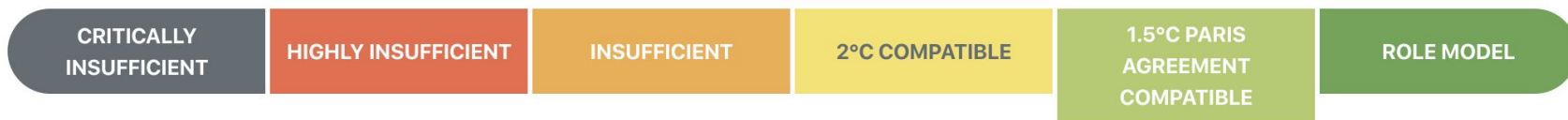
For local authorities:

A voluntary task



The maps displayed are for reference only.

LAST UPDATE: March 2020



For local authorities

Significant role in reducing emissions:

Control of energy, transport, land use planning, building codes, waste management and community education.

Implement local demonstration projects and lobbying state or national governments on climate policy.

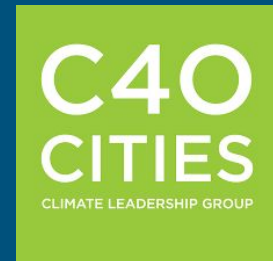
Transnational local government networks

International Council for Local Environmental Initiatives (ICLEI): 1990

The Covenant of Mayors (Europe): 2008

US Mayors Climate Protection Agreement (US): 2007

C40 Cities (global megacities): 2005



What roles do these networks play?



Connections between local authorities

Climate forums for members

To build capacity, share knowledge, and support local government in the implementation of sustainable development at the local level

International Council for Local Environmental Initiatives (ICLEI)

Founded in 1990 with more than 200 local governments from 43 countries , world Secretariat headquartered in Toronto, Canada.

In 1995, the headquarter moved to Bonn, Germany

In 2003, ICLEI revise their vision as - “Local Governments for Sustainability”

1750+

cities, towns and regions

124+

countries worldwide

25+

percent of the global
urban population

20+

percent of the global
population



Biodiversity and
Ecosystem Services



Climate Change
Mitigation



Climate Change
Adaptation



Energy



Food



Infrastructure,
Buildings and
Construction



Mobility and
Transport



Procurement
and Economy



Waste



Water



Indicators and
Performance
Measurement



Integrated
Management



Urban Governance,
Participation and
Social Innovation



Smart and
Nature-Based
Solutions



Finance and
Investment

International Council for Local Environmental Initiatives (ICLEI)

Five pathways for system change: low emission, nature-based, equitable, resilient circular and people-centered development

Technical consulting, training, and information services - > 500 activities

Citizen education programmes and corporate mitigation of emissions

Requirements: self-defined commitment to climate protection and the payment of annual membership dues based on population size

Criticisms to ICLEI

Support for Agenda 21, a nonbinding United Nations initiative that seeks to promote resource and land conservation.

No enforcement or external monitoring system in place for Cities for Climate Protection (CCP), many cities take minimal actions to reduce GHG emissions.

No information is provided by ICLEI as to how membership fees are utilised or how input and feedback is sought from local governments.

The national ICLEI office to be didactic in dealing with local government members



Active City - Copenhagen, Denmark

Active City - Copenhagen, Denmark

First carbon neutral capital by 2025



Switching to biomass in the district heating system

Extending cycling 'superhighways' in its continued modal shift

Making heavy investments in wind power and other renewables

2014 National Earth Hour Capital and 2014 European Green Capital, and receiving the 2013 Climate Leadership Award for Carbon Measurement and Planning.

Acts that Copenhagen is doing



The efficient transit systems, from buses and trains to one of the world's most extensive cycle lane networks.

Improving its cycling and public transport infrastructure in a number of ways, including 'green wave' traffic signals prioritizing bicycles and buses, and resting bars for cyclists at intersections.

In cooperation with neighboring communities, Copenhagen has started construction of 'bicycle superhighways' – wider, smoother and better-lit cycle tracks, in some places with three lanes – to encourage more suburban commuters to abandon cars for bikes.



A total of 26 bicycle superhighways are planned, covering 300 kilometers.

Green electricity exports

The image shows a series of wind turbines silhouetted against a sunset sky. The sky transitions from a deep orange near the horizon to a pale yellow at the top. The turbines are arranged in a line across the frame, with their three blades clearly visible. In the background, the dark blue sea stretches to the horizon, where some distant lights and structures are visible.

By 2025, Copenhagen's production of electricity and heating will be mainly based on wind, biomass, geothermal energy, and waste.

Energy efficiency

reducing energy consumption in buildings by 40%

introducing high energy-efficiency requirements for new buildings

running all vehicles on electricity, hydrogen or biofuels

retrofitting all street lightning

installing 60,000 square meters of solar PV panels on municipal buildings.

This is estimated to reduce CO₂ emissions by 20,000 tons



<https://inhabitat.com/copper-clad-copenhagen-landmark-boasts-denmarks-most-energy-efficient-laboratories/>

Reaching climate protection goal through active cities: Vision and milestones for Schwerin



Schwerin

Country: Germany

Capital of
Mecklenburg-Vorpommern
and regional centre

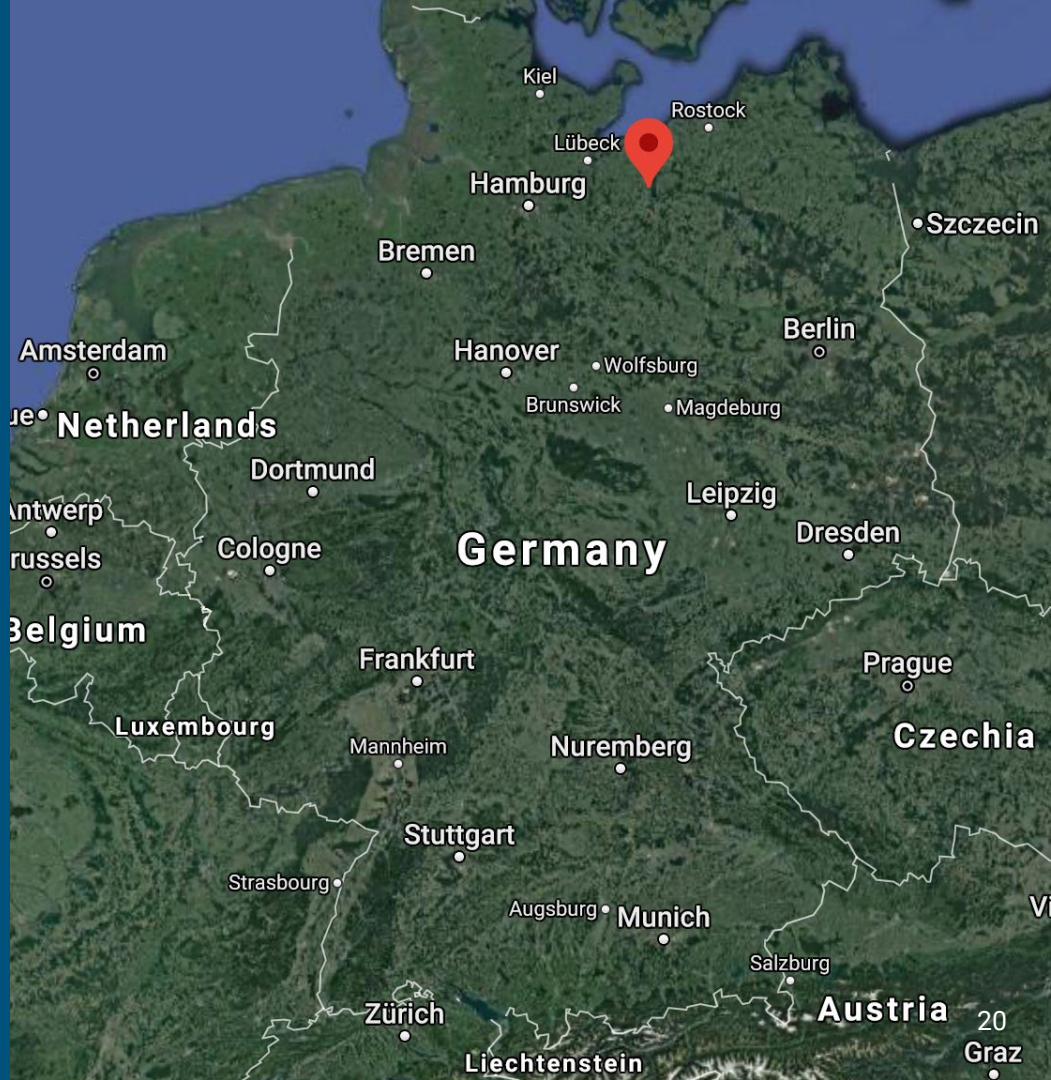
Population: 95,818 (2018)

Area: 130.5 km²

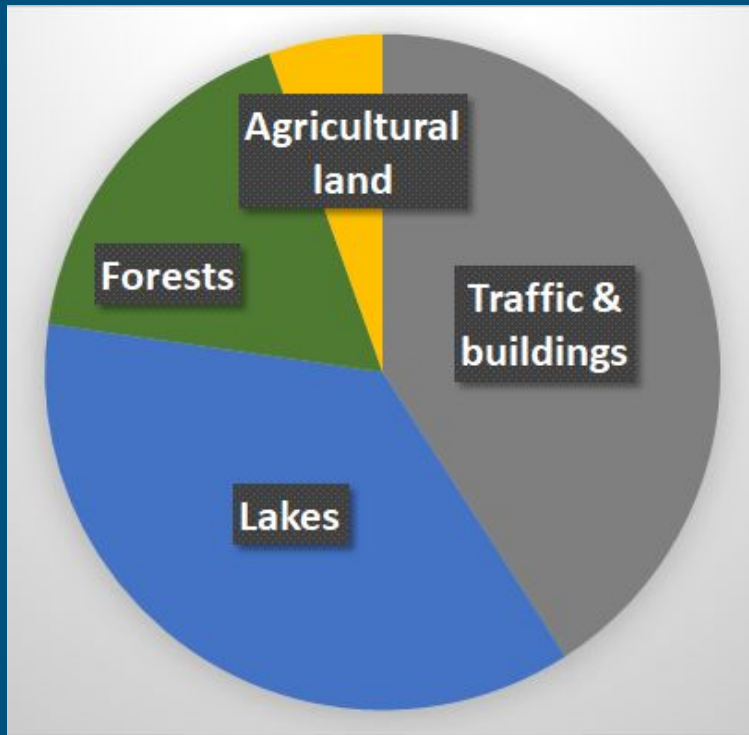
734 inhabitants per km²

Map:

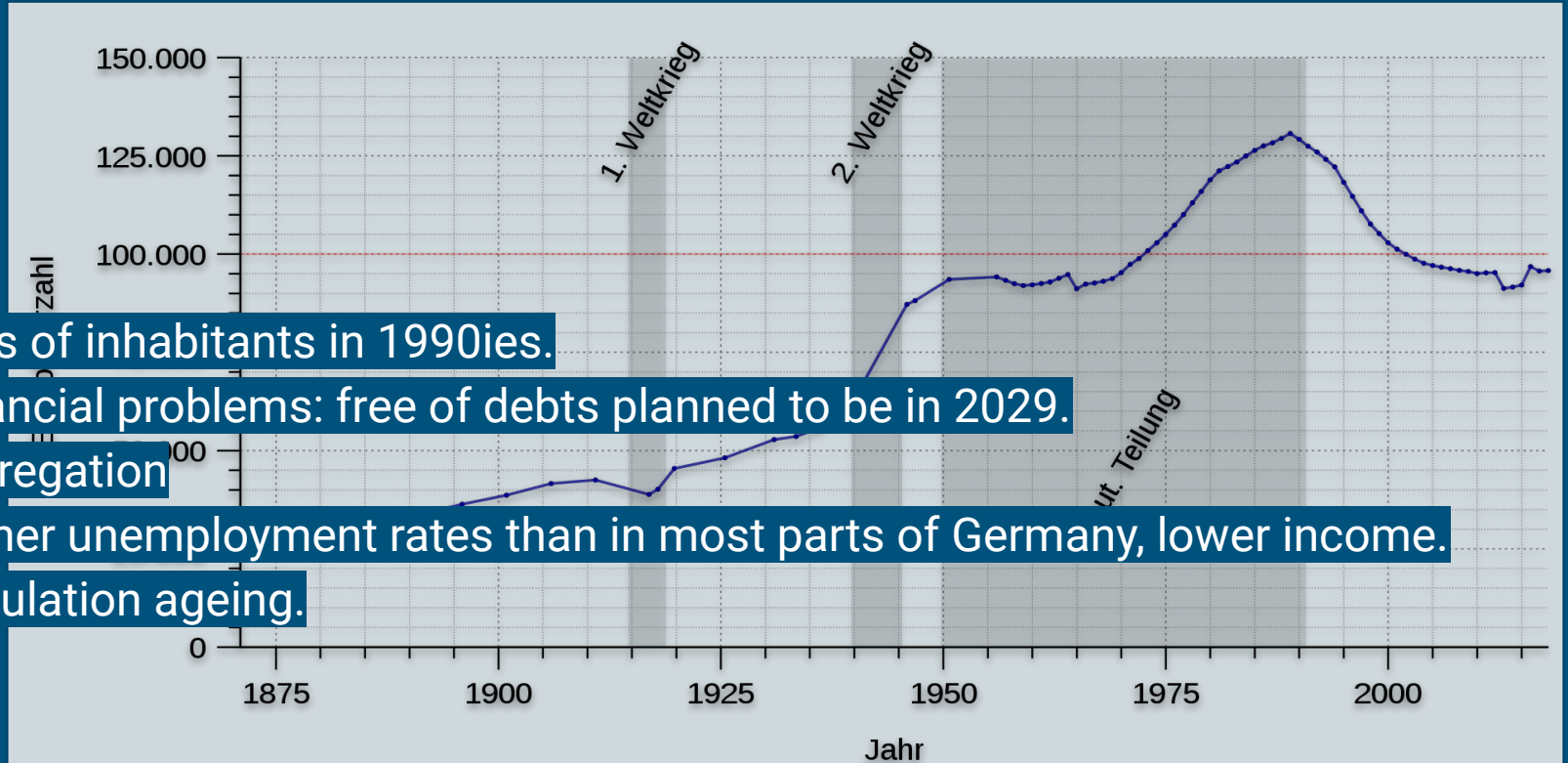
<https://www.google.com/maps/place/Schwerin,+Germany/@53.615894,11.330793,12z/data=!3m1!1e3!3m2!1s0x47add992b50ef799:0x4251ae8ad8482c0!8m2!3d53.6355022!4d11.4012499>



Introduction to Schwerin



Introduction to Schwerin



- Loss of inhabitants in 1990ies.
- Financial problems: free of debts planned to be in 2029.
- Segregation
- Higher unemployment rates than in most parts of Germany, lower income.
- Population ageing.

Introduction to Schwerin

Predominant employers and industries:

Public administration

Hospital - largest employer >2000 ppl.

Service sector, e.g. Deutsch Bahn AG, Deutsche Post AG

Industry: plastics, mechanical engineering, medical devices, components for aircrafts



https://de.wikipedia.org/wiki/Dolce_Gusto#/media/Datei:Dolce_gusto_capsules_cappuccino.jpg

Schwerin's past climate action

2012 **Integrated concept for climate protection** to reduce emission by 40% compared to 1990 until 2020 (Germany's goal according to Kyoto protocol).

Apart from the actions from the city officials there are other actions for climate protection going on:

- In November 2019 a Climate Alliance was founded,
- in January 2020 a Climate Union.



Schwerin's past climate action

- Unrealistic calculation of emissions
- Not considering all consum induced emissions like from cement when a new building area is set up or from waste treatment elsewhere.
- Overestimating impact of measures

- The measures were rarely implemented.

Maßnahmen im Handlungsfeld Energieversorgung							
Kurzbezeichnung	Titel der Einsparmaßnahme	CO ₂ -Minderung in t/a	Vermeidungskosten in €/t	Priorität	Umsetzungszeitraum	Flankierende Maßnahmen	Hemmnisse
MEV-1	Optimierung im Heizkraftwerk Süd	4.900	-68	kurzfristig	2 - 5 Jahre		Realisierung im laufenden Betrieb nicht möglich; technische Umsetzungsfähigkeit muss geprüft werden
MEV-2	Brennstoffwechsel GuD am Standort Süd- Einsatz von Biomethan	58.300	485	mittelfristig	2 - 3 Jahre	Langfristige Brennstoff-Beschaffungsverträge beachten	Biomethanherzeugung begrenzt, Konflikte Biogasanlagen, Brennstoffpreis
MEV-3	Brennstoffwechsel GuD am Standort Süd- Einsatz von Gas aus Überschussstrom aus erneuerbaren Energien (EE-Gas) - Alternative zu MEV-2	58.300	217	mittelfristig	2 - 3 Jahre	Langfristige Brennstoff-Beschaffungsverträge beachten	Infrastruktur für die Umwandlung von Überschussstrom noch nicht ausreichend vorhanden, Brennstoff-Preisgestaltung noch unklar
MEV-4	Ersatz der GuD Süd durch Biomasseheizkraftwerke	44.100	69	mittelfristig	5 Jahre	Beschaffung sicherstellen	Biomasse ist in Mecklenburg-Vorpommern begrenzt
MEV-5	Fernwärme Temperaturabsenkung	2.900	54	mittelfristig	3 - 5 Jahre		Kundenanlagen/Netzschlechtepunkte müssen angepasst werden
MEV-6	Fernwärme Verdichtung/Ausbau	3.900	100	kurzfristig	2 Jahre	Förderung, Beratung, Fernwärmesatzung	Umfangreiche Baumaßnahmen, heterogene Kundengruppe, bestehende Versorgung noch nicht abgeschrieben
MEV-7	Geothermie/ Sole- Wasser Wärmepumpen (oberflächennahe Kollektoren)	1.400	210	mittelfristig	10 Jahre	Energieberatung, Förderung	Investitionskosten, Strompreis
MEV-8	Geothermie/ Sole- Wasser Wärmepumpen (Sonde 80m)	14.000	337	mittelfristig	10 Jahre	Energieberatung, Förderung	Investitionskosten, Strompreis
MEV-9	Geothermie- Nutzung Waisengärten	4.400	-129	kurzfristig	2 Jahre		Akzeptanz von Tiefenbohrungen bzw. Befürchtung von Schäden
MEV-10	Solarthermie- Dachanlagen	4.900	409	mittelfristig	10 Jahre	Solarkataster, Energieberatung, Förderung	Hohe Investitionskosten
							Sinkende Solarförderung,

Maßnahmen im Handlungsfeld Energieversorgung

Kurzbezeichnung	Maßnahmen im Sektor öffentliche Einrichtungen	
	Kurzbezeichnung	Maßnahmen im Sektor Kleinverbrauch (Haushalte und andere)
		Maßnahmen im Handlungsfeld Landnutzung

Maßnahmen im Handlungsfeld Stadtentwicklung

Kurzbezeichnung	Maßnahmen im Verkehrssektor					
	Kurzbezeichnung	Titel der Einsparmaßnahme	CO ₂ -Minderung in t/a	Vermeidungskosten in €/t	Priorität	Umsetzungszeitraum

MEV-1	MSt-1	MV-1	Weiterentwicklung und Umsetzung des Radverkehrskonzeptes/ Radwegplanes	Angabe nicht möglich	kurzfristig	dauerhaft	
MEV-2	MSt-2						Luftreinhaltung, Verkehrssicherheit)
MEV-3	MSt-3	MV-2	Herstellung und Umsetzung einer Fußverkehrskonzeption	Angabe nicht möglich	mittelfristig	dauerhaft	Öffentlichkeitsarbeit, Nutzen von Synergien (Lärminderung, Luftreinhaltung, Verkehrssicherheit)
MEV-4	MSt-4						Öffentlichkeitsarbeit, Nutzen von Synergien (Lärminderung, Luftreinhaltung, Verkehrssicherheit)
MEV-5	MSt-5	MV-3	Konzeption und Umsetzung einer städtebaulichen Bemessung von Straßenräumen	Angabe nicht möglich	mittelfristig	dauerhaft	Öffentlichkeitsarbeit, Nutzen von Synergien (Lärminderung, Luftreinhaltung, Stadtentwicklung, Verkehrssicherheit)
MEV-6	MSt-6						Öffentlichkeitsarbeit, Nutzen von Synergien (Lärminderung, Luftreinhaltung, Stadtentwicklung, Verkehrssicherheit)
MEV-7	MSt-7	MV-4	Installation eines regionalen Arbeitskreises	Angabe nicht möglich	sofort	dauerhaft	Öffentlichkeitsarbeit
MEV-8		MV-5	Weiterentwicklung des Pendlernetzwerkes	Angabe nicht möglich	mittelfristig	dauerhaft	Öffentlichkeitsarbeit, Nutzen von Synergien (Lärminderung, Luftreinhaltung, Stadtentwicklung, Verkehrssicherheit)



https://www.svz.de/img/zeitung-fuer-die-handeshauptstadt/crop/23828147/0507599001-cv16_9-w880-o/23-108831713-23-108831715-1557943537.jpg

Konflikte mit Landwirtschaft

Konflikte mit Landwirtschaft

gf. liegt erst

<https://www.schwerin.de/mein-schwerin/leben/umwelt-klima-energie/klima-mobiltaet/integriertes-klimaschutzkonzept/>

Maßnahmen im Handlungsfeld Energieversorgung

Kurzbezeichnung	MEV-1
Kurzbezeichnung	MEV-2
Kurzbezeichnung	MEV-3
Kurzbezeichnung	MEV-4
Kurzbezeichnung	MEV-5
Kurzbezeichnung	MEV-6
Kurzbezeichnung	MEV-7
Kurzbezeichnung	MEV-8
Kurzbezeichnung	MEV-9
Kurzbezeichnung	MEV-10

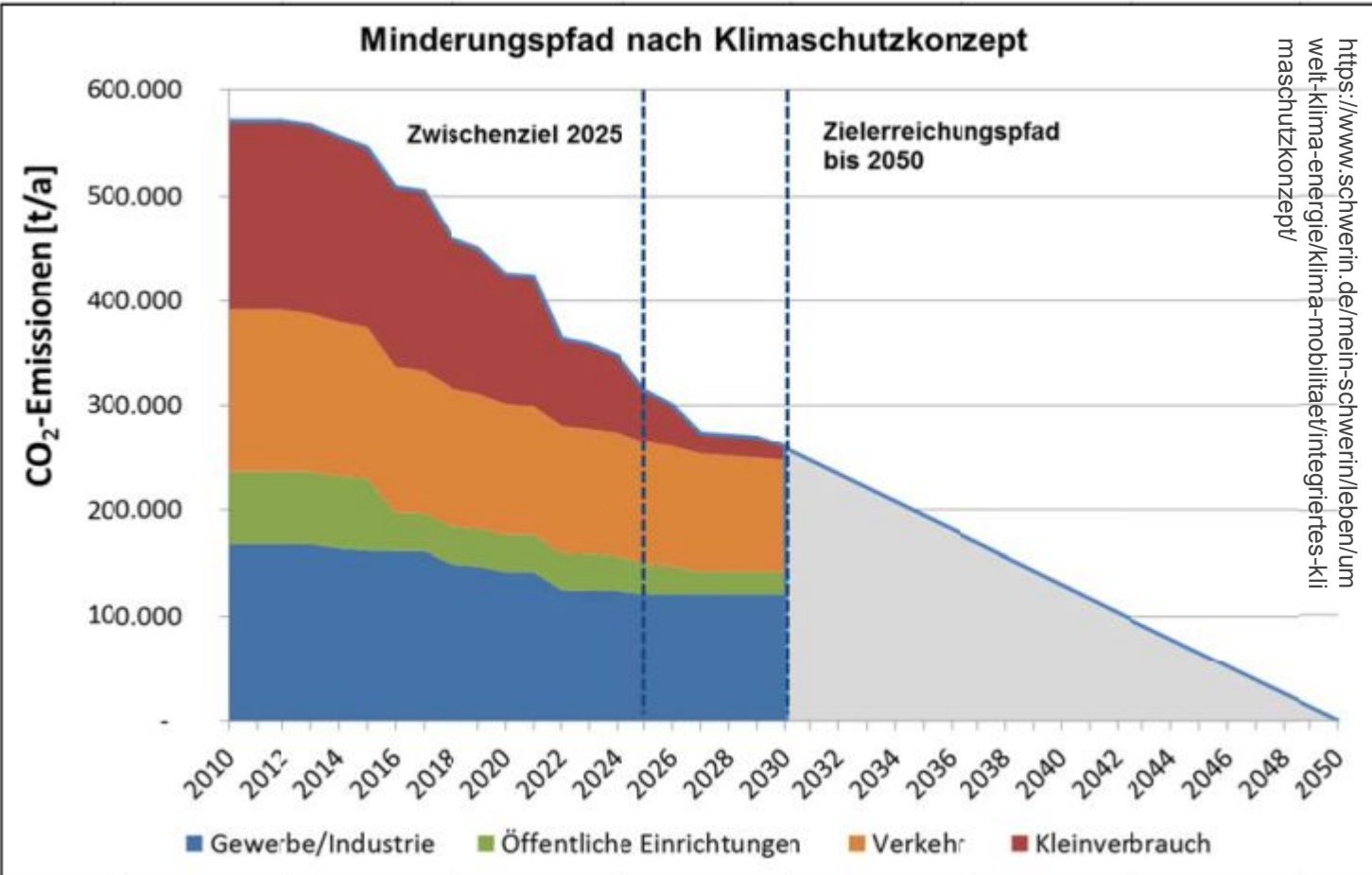
Maßnahmen im Sektor öffentliche Einrichtungen

Maßnahmen im Sektor Kleinverbrauch (Haushalte und andere)

Kurzbezeichnung	Maßnahme
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Maßnahmen im Handlungsfeld

Kurzbezeichnung	Maßnahmen im Verkehr	
	Kurzbezeichnung	Titel der Einricht
MSt-1	MV-1	Weiterentwickl Umsetzung de Radverkehrsk Radwegplane
MSt-2	MV-2	Herstellung un einer Fußverkehrsk
MSt-3	MV-3	Konzeption un einer städteba Bemessung v Straßenräume
MSt-4	MV-4	Installation ein Arbeitskreises
MSt-5	MV-5	Weiterentwick Pendlernetzw



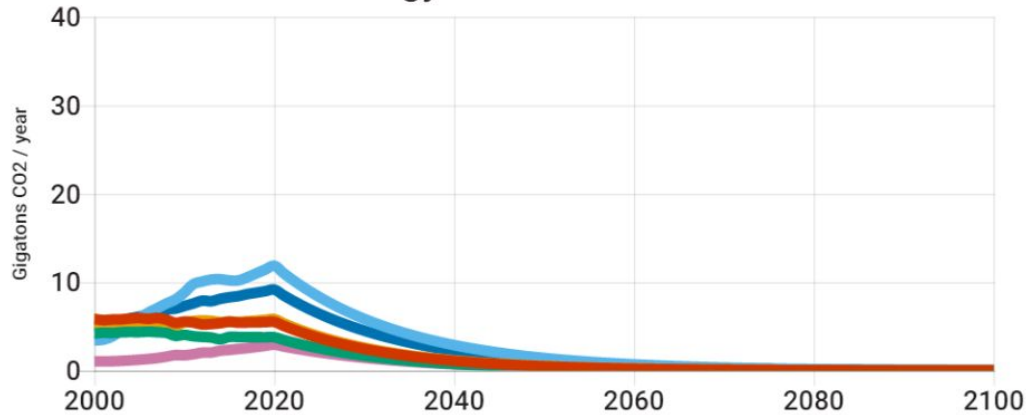
<https://www.schwerin.de/mein-schwerin/leben/umwelt-klima-energie/klima-mobilitaet/integriertes-klimaschutzkonzept/>

Vision: Schwerin in a world “well below 2°C” temperature rise

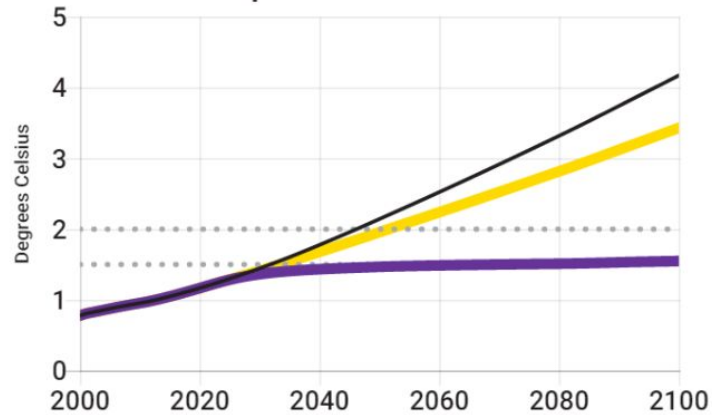
Why a new vision and milestone plan?

- Outdated goal: from Kyoto to Paris
- Outdated measures
- Calculate more accurate

Energy CO2 Emissions



Temperature Increase



	Emissions Peak Year	Reductions Begin Year	Annual Reduction Rate	Prevent Deforestation	Promote Afforestation
US	2020	2020	8%	20%	20%
EU	2020	2020	8%	20%	20%
Other Developed	2020	2020	8%	20%	20%
China	2020	2020	7%	20%	20%
India	2020	2020	7%	20%	20%
Other Developing	2020	2020	7%	20%	20%

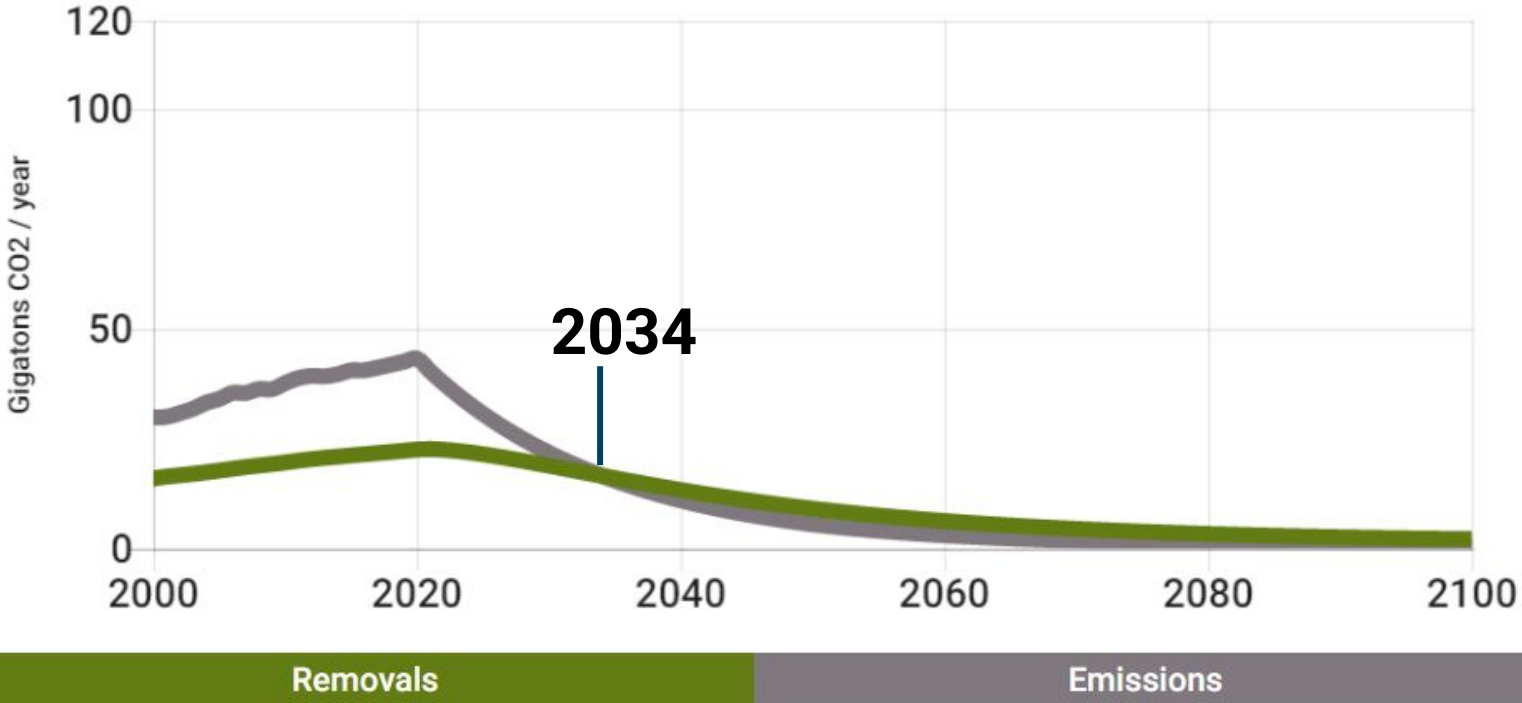
+1.5°C

Temperature Increase by 2100



C-ROADS

Total Emissions and Removals



Vision: Schwerin in a world “well below 2°C” temperature rise

In line with effort to limit global warming to 1.5 to 2 degrees.

Reduce emissions at least 50% by 2025 compared to 2020
and at least 80% by 2030.

Reach carbon neutrality by 2035.

Milestones Overview

City Planning

Industry, business and trade

Public Institutions

Transportation

Circular Economy

Energy production and use

Carbon Sequestration

City Planning: Renovation

According to Carl Elefante, FAIA, LEED AP, “The Greenest Building Is...One That Is Already Built.”

Reuse abandoned buildings instead of constructing new buildings

This can be promoted by providing incentives and regulations

Also ensure that older buildings are renovated sustainably by adding regulations

City Planning: Renovation and New Construction

Buildings must have thermal insulation to not lose heat in Winter

- Old Buildings are greener than we thought

Regulations for renovations to buildings to make them more efficient

City Planning: New Construction

Regulation for sustainable city planning: No new construction of buildings on previously undeveloped areas - containing Human Sprawl;

State Laws that proactively empower cities and counties to prevent human sprawl

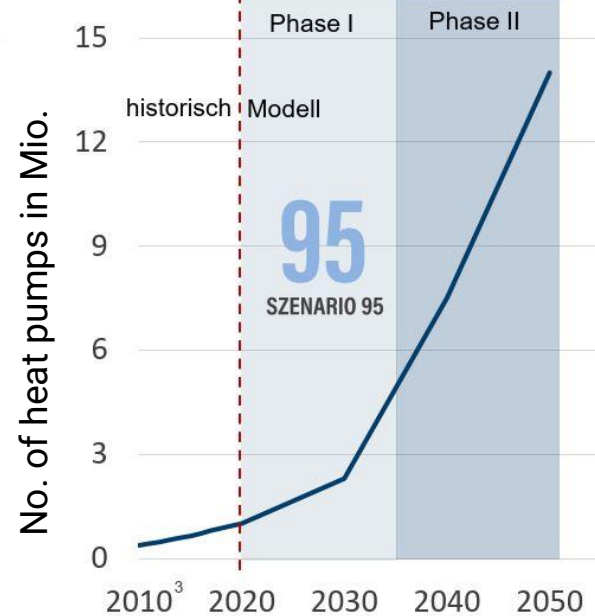
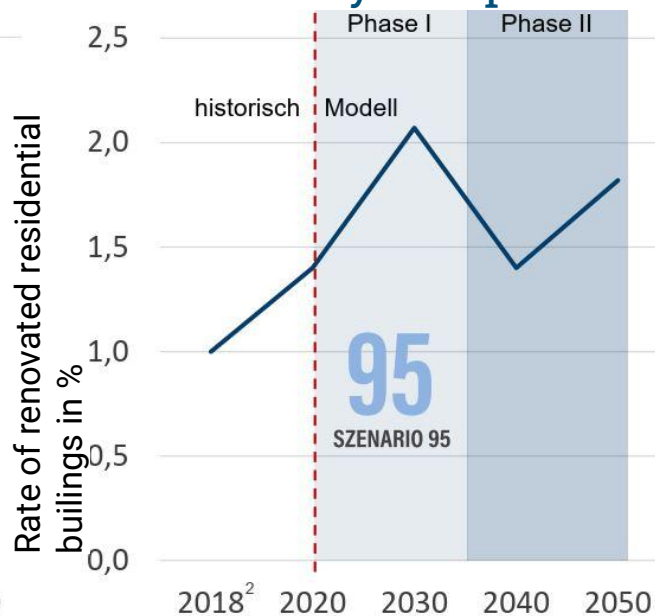
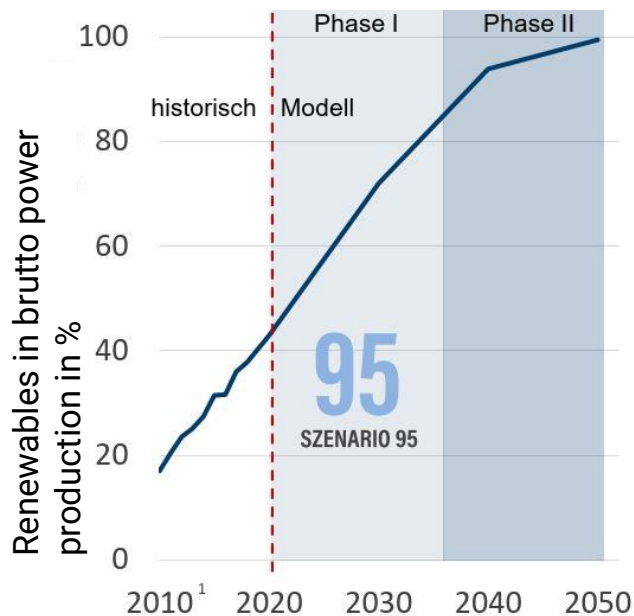
- Oregon's state Law
- Maryland's smart-growth



City Planning: New building areas

- not on not-sealed areas
- only if buildings are constructed to be heated carbon neutral
- have to make use of all opportunities for energy production: solar thermal, photovoltaic, maybe long distance heating from geothermal and waste
- use potential for climate adaptation (greening roofs, walls, streets)
- reducing need for mobility by combining housing & work & daily needs like shops & schools
- providing good public transport service
- enabling sufficient lifestyle: 35m²/person in changing life situations
- supporting shared economy (washing machine, e-car)

Results from modeling heating of buildings in a scenario for reaching 95% reduction of GHG emissions in Germany compared to 1990.



1st Phase: Electricity production needs to become carbon neutral. While this effort is going on, up-to-date insulation of buildings is of greatest importance.

2nd Phase: As soon as electricity is more than 80% renewable the increase of heat pumps as heating systems is of most importance.

¹ Quelle: BMWi, Zeitreihen zur Entwicklung der erneuerbaren Energien in Deutschland, Stand August 2019

² Quelle: dena, dena-Gebäudereport Kompakt 2018

³ Quelle: Bundesverband Wärmepumpen e.V.: BWP Marktzahlen 2018, Stand Januar 2019

Business and trade: Employment

Promote employment in green energy industry by providing training to workers previously in other unsustainable industries.

For example, train heating constructors for new systems

At the same time, this educates the community.

Business and trade: Telecommuting

Encourage businesses to provide remote jobs to their employees to reduce commuting

This would reduce the carbon emissions from those commuting to Hamburg and also into Schwerin from smaller cities nearby.

Educate business owners about the advantages of having remote employees (for example, sharing awareness of tax and financial benefits, etc.)



Public Institutions: Regulate heating temperatures

Example: Taiwan

A/C not allowed to below 27°C in Summer and not above 18°C in Winter

Regulation applies to public buildings, offices and businesses open to public.

Public institutions: Contracts in 2020

Switch to “green energy” contracts for all buildings of the city and the city’s companies

Campaign to make citizens switch too

Provide incentives?

Fortaleza, Brazil example.



Transportation: Public transit



- Public transportation free of ticket fee to reduce road traffic

Pioneers: Luxembourg (2020); Tallin, Estonia (2013)

- Increase intervals of trams, buses and trains, especially those which connect Schwerin to larger cities
- Improve connections by rebuilding demolished tram lines

Transportation: Improve bike paths

Policies: Laws need to prioritize cyclists and allow them to feel safe.

Infrastructure: Connect existing paths to create a wider network. Traffic education and road signs need to be clear.

Culture: Amsterdam and Copenhagen are examples of cultures which are immersed in their value of commuting by bicycle.

Marketing: Emphasize cycling as practical and beneficial.



Transportation: Public biking system

Initiate a public biking system (included in public transportation system)

Or affordable private bike rental, such as Nextbike in Berlin, Ruhr Area:

Offer cargo bikes for rent at affordable rates! €9/24hr or €1/30min

- Partnership - Increase network by mutual recognition agreements
- Benefit - have flexibility in your commute



Transportation: Car free areas in city center

- Car free areas in city center
- Example: Mexico City - Car-free Sundays, an event to improve air quality in the city
- Add green space in Schwerin city center



Transportation: Promote car sharing

Dedicate more space to car sharing than individual owners

Promote electric car sharing by adding charging stations at designated points

(Use car sharing as a means
to regulate parking demand)



Circular Economy

Goal: All waste products are reused or recycled

Encourage and educate citizens to reduce and properly sort waste

Improve program to convert waste to biofuel (Example: Gela, Italy) or electricity (Example: João Pessoa, Brazil)

Energy production and use

Goal: 100% renewable energy by 2035

Regulated by the city's power company
"Stadtwerke Schwerin",

100% renewable energy in WEMAG
(private power company)



Carbon Sequestration

Urban forestry and green roofs

Protect existing forests/trees, plant new trees

Restoring peatlands and wetlands

Sustainable agriculture

Thank you for listening

Sources:

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<https://www.google.com/maps/place/Schwerin,+Germany/@53.615894,11.330793,12z/data=!3m1!4b1!4m5!3m4!1s0x47add992b50ef799:0x4251ae8ad8482c0!8m2!3d53.6355022!4d11.4012499>

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