

TAKING  
ACTION ON  
CLIMATE  
CHANGE





# Main? Or Milan?

How climate change is making itself felt in Frankfurt am Main and what the city can do about it

By Stephan M. Hübner

In 2019, Frankfurt broke a record: On 25 July, the highest temperature on that day – 40.2 °C – was measured in Westend, one of its suburbs. This made Frankfurt the hottest place in Hessen since weather records began in 1881. A superlative that shows how climate change is posing major challenges for cities too. Ways to deal with its consequences need to be found.

Rosemarie Heilig is on Goetheplatz, a square in Frankfurt's city centre. Lots of traffic, rows of houses all around, here and there a dot of colour: Japanese pagoda trees. To the east is the Zeil, Frankfurt's famous shopping street, to the west the Freßgass, one of its culinary miles. For Heilig, biologist and city councillor for the environment and women (Bündnis 90/Die Grünen), one thing is sure: »The square was built in entirely the wrong way for the challenges of climate change.« She says that this is due, among others, to the underground car park below: »It makes it impossible to plant really big trees where people could sit in the shade.« In her view, this is one of the reasons why the square dramatically loses its appeal at the latest when the temperature rises beyond 30 °C. »We have to prepare ourselves for the same scenario here in Frankfurt as in Milan,« she says, »and that will make a different kind of open space attractive than has been the case in the past.«

She points to the ground. It was previously too dark and heated up too much as a result. That is why sample areas with different, lighter coloured substrates have been laid in the square that store less heat. »We presented them to the local advisory council and the people of Frankfurt because we want to have a material here that meets with a high level of acceptance.« In her opinion, participation is particularly impor-

tant when it comes to climate protection and adaptation so that – as far as possible – everyone pulls together in the end. In this context, climate protection means protecting the global climate, while climate adaptation, on the other hand, is a more regional or local challenge. For her, this makes Goetheplatz a kind of outside laboratory in which to try out how existing urban structures could be adjusted to the new challenges.

The aim of the »Green Rooms«, benches with green roofs and side walls, is to communicate how pleasant greenery in the city can be.



»The square was built in entirely the wrong way for the challenges of climate change.« Rosemarie Heilig, city councillor for the environment, wants to combat overheating in the city centre through more greenery.



Green roofs can help prevent the city from overheating in the summer.

### Also a question of location

That Frankfurt is particularly affected by climate change is due to the city's location at the northern end of the Upper Rhine Lowlands. The climate here is naturally mild, annual rainfall tends to be low. In the height of summer, weather conditions with high mean and extreme temperatures and little natural air exchange dominate. And now there is climate change on top. In 2018, 108 warm days (over 25 °C) and 43 hot days (over 30 °C) were recorded in Frankfurt – in 2011, 75 warm days and 25 hot days had been forecast for 2050! Nowadays, annual rainfall is only a good two thirds of that which was normal in the past, and at the same time air pressure is increasing, which leads, among others, to less cloud formation [1]. One of the outcomes of this is more and more bad weather with storms, heavy rain and flash floods. Overheating poses health problems, above all for small children and elderly people, and calls into question the locations and amenities of hospitals, retirement homes and nursery schools. Last but not least, over 95 per cent of the trees in Frankfurt meanwhile display heat and drought damage (see also the article by Jan Schwenkenbecher, page 24).

### Think green

It is the plants that are particularly close to Rosemarie Heilig's heart. She is campaigning for more planning to be done in Frankfurt in future »from a green perspective«. Why? Because plants provide shade and bind climate-relevant carbon dioxide (CO<sub>2</sub>). And they evaporate water via their leaves, which cools the air, evens out temperature peaks and improves the microclimate. All this helps the city, she says, to remain a nice place to live despite climate change. She is convinced: »The population needs to become

aware of this.« That is why the »Green Rooms« have been set up on Goetheplatz, she says, benches with green roofs and walls with an integrated photovoltaic self-irrigation system. »The people of Frankfurt can experience for themselves the refreshing effect of plants on the climate and how nice it feels to sit there,« explains Heilig. The »rooms« are mostly decorated with herbs, grasses and shrubs – suggestions for what people could plant on their own balconies or in their own front gardens, and at the same time an advertisement for the city's campaign »Frankfurt Freshens Up«. »The aim is to encourage more green roofs, facades and backyards in Frankfurt,« says Rosemarie Heilig. In the framework of the programme, each property can apply for funds of up to € 50,000, she says. And advice on dealing with climate conditions as well as how and what to plant is also available. Over 100 applications for funding have been submitted so far and a good 40 have already been put into practice.

»Frankfurt Freshens Up« and the »Green Rooms« are just two examples of how the city wants to introduce its citizens to a more climate-friendly way of life. Overall, the bundle of measures naturally includes more. For example, additional trees are being planted in the streets and sealed surfaces converted to green spaces, parks are being preserved or expanded, for instance by acquiring privately owned land or breaking up sealed areas. That is why Rosemarie Heilig is also against the new underground rail link to Westend Campus which is to run under Grüneburg Park and the Palm Garden – in times of climate change, she says, you cannot endanger one of Frankfurt's largest parks by forcing a railway line under it. Heilig recommends a more ecological option, even if it costs more money – because »climate protection doesn't come for free.«

### An easier time for heat-loving species

When it comes to making Frankfurt greener, a certain topic pops up again and again: Namely, that plant species from warmer and drier regions are likely to have an easier time in Frankfurt in the future than indigenous vegetation. »We also see this with plants that migrate naturally to Frankfurt,« says botanist Professor Georg Zizka of Goethe University's Institute of Ecology, Diversity and Evolution. Zizka, who is also deputy director of the Senckenberg Research Institute and Natural History Museum in Frankfurt, is able to trace the development of Frankfurt's vegetation back over decades. »In the climatic mosaic of the city, those plants will have it increasingly easy which are better adapted to drought and heat.« If they are not, they find themselves subjected to increasing stress, become



more prone to disease and contribute to making the urban ecosystem fragile – with consequences for people and all other living things in the city that can hardly be estimated. However, Zizka says that »there are currently too few data available« to be able to judge whether certain heat-loving wild plants have already made their way to Frankfurt on their own initiative due to climate change. He adds, however, that there is clear evidence that over 400 plant species have disappeared from Frankfurt since 1900 as a result, for example, of changes in land use or because green spaces were destroyed which are now to be restored for reasons of climate protection.

### Alternatives to private cars

Of course, climate protection and adaptation in a city like Frankfurt cannot succeed solely through the management of green spaces. There are other key factors: Urban planning, construction, water, health as well as mobility and transport. The latter is a topic that concerns Dr Jutta Deffner from the ISOE – Institute for Social-Ecological Research in Frankfurt. The institution was founded in 1989 as an interdisciplinary, independent research institution, among others by Professor Egon Becker, who was a science and higher education researcher at Goethe University.

For Jutta Deffner, the topic of mobility and transport occupies a key role in the climate debate, as car emissions often serve as an example of the volume of climate-relevant greenhouse gas emissions that need to be reduced. As a mobility researcher and urbanologist, she is looking for practical alternatives to current forms of mobility and transport infrastructures. »Tak-

ing a look at what is known as the »modal split« can help here. This is an indicator that shows the percentage share of the individual modes of transport. And we can see from this that traffic within Frankfurt is by all means already climate-friendly. People do a lot on foot or by bike, or else they use public transport.« It is commuter traffic that causes more problems. Finding a solution which is feasible under climate considerations is a task, she says, that only the region as a whole can master. »There are already many projects in the planning stage, such as the North Main Suburban Line from Frankfurt to Hanau or the Western Regional Tangent. But the processes are taking so long that lots of people think nothing is happening.«

Admittedly, says Deffner, there is still sufficient scope within Frankfurt as well for more climate-friendly mobility and traffic planning. The network of cycleways, for example, is not yet ideal, calls for further expansion and needs to be more homogeneous, more clearly signposted and thus safer. Pedestrians also still come up against obstacles in too many places in the city, she adds. Pavements and other infrastructures, for example, do not always invite people to use them; they are too unattractive or too confusing. As an alternative to owning your own car, Jutta Deffner also mentions the »Mobility as a Service« (MaaS) initiative. This concept was developed above all by Sonja Heikkilä and Sampo Hietanen from Finland; Helsinki, the Finnish capital, is one of the places where it is already being successfully put into practice: »With MaaS, you calculate your own individual mobility budget, put together, for example, from

### Literature

The data pool comes from the Frankfurt Climate Plan Atlas (1994, 2008 and 2016), ongoing climatic studies since the 1970s and a microclimatic simulation and a local climate projection from 2011, compiled by Hans-Georg Dannert of the Environmental Office of the City of Frankfurt.

[www.nordmainische-s-bahn.de](http://www.nordmainische-s-bahn.de)  
[www.rtw-hessen.de](http://www.rtw-hessen.de)



The problem of commuter traffic: People who live in Frankfurt cycle or use public transport rather than travelling by car. However, the commuter traffic that pours into the city from outside every day is still substantial.

public transport flat rate, cargo bike sharing or e-scooter minutes. In our case, RMV, the Rhine-Main Transport Association, could provide the platform for this. An example from Vienna is also interesting: There, citizens can purchase a public transport ticket for € 365, but at the same time all car users without exception must now pay for parking spaces in the districts. In this way, people are gently urged, as it were, to use their cars less.«

### Dreams of a building exhibition

All things considered, there are two ways for the City of Frankfurt to cope with climate change and remain a good place to live: to transform existing urban space in a climate-friendly way and to continue urban development under consideration of climate adaptation aspects. In this context, motivating the population to become involved is one side of the coin.

According to Heilig as city councillor for the environment, the City of Frankfurt is by all means prepared to assume a pioneering role. Behind the scenes at Römer City Hall, staff are working on exactly this: In 2019, for example, the city council said ›Yes‹ to the »Frankfurt Climate Alliance« – a broad catalogue of measures intended to help minimise the consequences of the climate crisis for Frankfurt. These include, for example, more funding for photovoltaic systems, greater use of service water or the obligation to use land economically in the light of progressing densification.

Maintaining the city's appeal as an attractive place to live makes the search for new approaches even more pressing. At the present time, over 60,000 people move to Frankfurt each year, which makes climate-conscious planning and construction indispensable. This raises many questions: Where are there cold air corridors? How can they be preserved and optimised? How can storm and flood protection be improved? The city's »Guidebook on Climate Change and Environmental Protection in Planning and Construction« gives planners and builders advice on how to renovate, convert and construct new buildings in a climate-friendly way. Overall, climate protection criteria need to be given greater weight in building competitions.

As far as new buildings are concerned, putting passive house standards into practice, which could save up to 75 per cent of heating energy, is of particular importance to Rosemarie Heilig. »Passive houses are our showcase project in Frankfurt,« she says. »The new Old Town has also been built in this way.« Nonetheless, there is still a lot of catching up to do, she says, specifically in the area of planning and construction. »We need to move towards becoming a very green city with a car-free city centre. That's the

## IN A NUTSHELL

- Climate change is impacting on living conditions in cities such as Frankfurt am Main.
- It is important to reflect as a society on climate adaptation and climate protection, that is, to rebuild existing urban space in a climate-friendly way and to continue urban development under consideration of climate adaptation aspects.
- Important aspects of Frankfurt's climate-friendly development are above all urban green spaces and transport.



### The author

**Stephan M. Hübner**, born in 1974, studied biology at Goethe University and works above all as education and science editor at hr-INFO radio. Previous stages in his career were the Public Relations & Communications Department of Goethe University and the Polytechnic Foundation of Frankfurt am Main. He specialises in biodiversity, zoo biology and science communication.

[smhuebner@gmx.de](mailto:smhuebner@gmx.de)

challenge for all departments. Commerce, environment, planning: Everyone must pull together,« says Heilig, appealing to her colleagues. Her wish: »An international building exhibition with precisely this motto: How do we want to shape not only Frankfurt but the entire Rhine-Main area in the future? How should the new suburbs look, where people will still be able to live a good life in 30 years and won't be groaning under the burden of climate change and having to put up with its consequences for their health?« When? Preferably already in 2021. As far as protecting the climate is concerned, every second counts. ●