

# lichtblick

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**Cheaper ways to produce green  
hydrogen – thanks to new materials**

A PORTRAIT OF MICHELLE BROWNE, PAGE 4

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# Three questions for Bernd Rech



**We are into a new year. What things would you especially like to get moving forward at HZB this year?**

**Bernd Rech (Scientific Director):** Together with our funders, we want to develop a solid plan for how we can push ahead with HZB's strategy despite difficult conditions. This includes how we will plan and finance our major infrastructure projects.

Together with everyone at the centre, I would like to develop our HZB corporate culture further – in a year that will hopefully bring fewer crises and more peace. In the second half of the year, we will already be preparing for the evaluation of our research in 2025.

**What are the most important dates in the 2024 calendar for you at the moment?**

Right now I'm spending a lot of time on strategic planning and leaving some time for creative thinking – so that's a super important date. "You should never have so much to

do that you don't have time to think," says Georg Christoph Lichtenberg.

In April, there is a delegation trip to Singapore and South Korea in the calendar. Things will get very exciting this May. Then the lines for the Helmholtz Association's future research programmes will be discussed with the international advisory boards. After that, there's the supervisory board meeting and then, very importantly, the summer holidays with family.

**What can HZB employees look forward to in 2024? What are you especially looking forward to?**

For most of us who are paid according to the TVÖD scale, there will be a significant and long-deserved pay raise in March. Many of us can probably look forward to successes great and small in research and education: by which I mean prizes, brilliant theses and pioneering publications as well as successes

in knowledge and tech transfer. The really big successes will be born from commitment and contributions from many people at HZB. So, we can and should all celebrate those successes together.

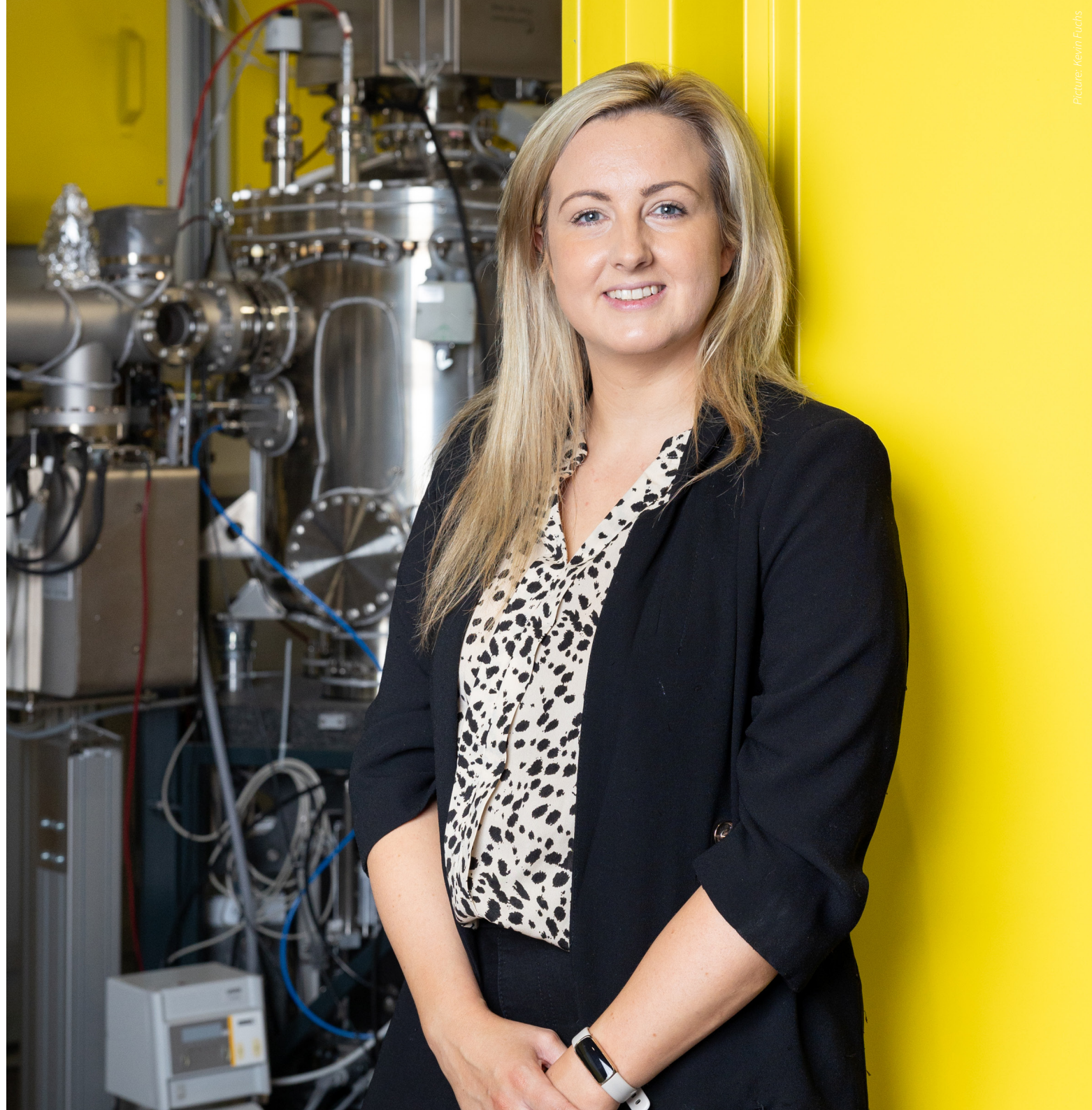
And last but not least, even though the first weeks are already over: I wish everyone at HZB as well as their friends and families a successful, happy and healthy 2024!

Interview by Silvia Zerbe.

COVER STORY

# The Energy Transitionist

On the path to the energy transition: electrochemist Michelle Browne wants to produce hydrogen on a large scale, cheaply and, above all, “greenly”.



In the hands of its inventor, the device looks rather unspectacular: a solid plastic cylinder a few centimetres in diameter, with several holes and angular bits sticking out from the curved surfaces. In laboratory applications, however, the device delivers a yield several times higher than previous apparatuses. When connected to the right voltage source and with the right pair of electrodes in the openings, the electrolyser – or hydrogen generator – delivers significantly more “green”, i.e. environmentally friendly, hydrogen than the devices used so far. Those ones are only able to split water into its gaseous components in vessels the size of a shot glass.

Michelle Browne, the developer of this novel device, could have simply patented her invention. However, “It was important to me that as many research colleagues as possible around the world could use this innovation for the eco-friendly production of hydrogen,”

the electrochemist says. So, instead, she published the blueprint online as open source – free for all. All of the components of her electrolyser combined cost around 200 euros, while commercial models cost more like 4,000 euros. Laboratories worldwide have already downloaded Michelle Browne’s file and are using their new devices.

However, if hydrogen production is to be revolutionised on an industrial scale, the electrolysis devices will have to be made much larger. Bringing about the energy transition will mean using kilotons of this climate-friendly gas for generating electricity in fuel cells, for smelting iron ore and as an energy storage medium. According to a calculation by the German Aerospace Center, only five percent of the hydrogen used so far is produced in an environmentally friendly way. The vast majority of it comes from natural gas, and its production generates enormous quantities of climate-damaging CO<sub>2</sub>.

Hydrogen is a core element of the energy transition to achieve greenhouse gas neutrality in Germany by 2045.



2.7–3.3  
million

of tonnes of hydrogen  
will be needed in  
Germany by 2030  
(estimate)

And the global demand for hydrogen is soon going to multiply many times over.

Michelle Browne therefore intends to use her research to ensure that producing “green” hydrogen will be the only cost-effective option in the future, and that it will be used everywhere. This year, the independent jury presented her with the Curious Mind Award in the category “Mobility, Energy and Sustainable Business”.

### “It comes down to the right mixture”

The 33-year-old Irishwoman received this award not only for developing a new laboratory technique. She is also researching new materials for highly efficient electrodes, which are required for producing “green” hydrogen from water. For this, she employs so-called MXenes (pronounced “Maxenes”): refined metal compounds synthesised in the laboratory, which can be deposited and applied in wafer-thin layers just one molecule

“Germany has a strong tradition and quite a dominant position in environmental technologies. I would be hard pressed to find better research conditions anywhere in the world.”

Michelle Browne



in thickness. “It all comes down to the right mixture,” the PhD chemist explains. “Some MXenes are excellent at conducting electricity, while others make especially effective contact with the water molecules in their environment. Others still are particularly robust.” These completely novel substances were only discovered in 2012 and have hardly been researched so far. “And new compounds are being developed almost daily,” says Michelle Browne, who is continually using new mixtures in her experiments at Helmholtz-Zentrum Berlin (HZB) and testing them for their service life and efficiency. The material Browne works with is still quite expensive – one kilo of MXene costs around 1000 euros. But that is already much cheaper than the platinum electrodes that are commonly in use today. And once the optimal compounds for the diverse areas of application have been found, they will be able to

be produced on an industrial scale at much lower prices still.

#### Fascinated by CSI investigators

Michelle Browne’s path to “green” hydrogen production was by no means preordained. Born in Dublin, the daughter of a bank employee and a motor vehicle electrician who ran a heating oil business on the side, she originally wanted to study forensic science. “I was fascinated by the TV series “CSI: Miami”, by the work of the crime scene investigators depicted in it,” she recalls. But when it came to choosing a specific degree programme, she ended up in chemistry: “That came closest to the subject matters I was interested in.” Ultimately, she completed her bachelor’s degree in forensic chemistry. During her doctoral thesis on the electrolysis of water, Browne developed a penchant for physical chemistry. And when she realised

that she wanted to use her profound scientific qualifications to support the energy transition, she applied to the Helmholtz Association as head of a junior research group for electrolysis and efficient hydrogen production. “Germany has a strong tradition and quite a dominant position in environmental technologies,” says Browne. This was one reason why she turned down a lavish scholarship from the highly prestigious Royal Society.

For Browne’s current research, HZB offers yet another exclusive advantage: it operates its own large-scale research facility, BESSY II light source. Browne can use the synchrotron radiation to measure the surface structures of her electrodes with extreme precision and then improve upon them. “I would be hard pressed to find better research conditions anywhere in the world,” the Irishwoman says proudly.

Browne’s international laboratory team is made up of an equal number of men and women. It is important to her that women can also make a career in the natural sciences. For the technical development of the electrolyzers, the chemist is cooperating with the company Oort Energy in Bristol, UK, a specialist in technologies for the industrial production of “green” hydrogen. Browne, who besides her laboratory work also teaches at the Technische Universität Berlin, already has her sights set on the next challenge: a multi-million euro grant from the European Research Council. “With that, we could take research into eco-friendly hydrogen production to a whole new level.”

■ BY MICHAEL O. R. KRÖHER

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*This article first appeared in manager magazin 11/2023*



## The bleating in Wannsee is back

Sheep have been living on the HZB site again since December 2023. The three sheep are called David, Smartie and Dexter (from left to right). They are five years old and stay outside on the grounds all year round. They have a stable for cold winter days. Dexter can be recognised by his light-coloured face. David has a little more hair on his forehead. The girl Smartie is a little more petite than her two friends.

However, no offspring are to be expected, as the animals are neutered. The North of England Mule mixed breed is very robust. Animals of this breed have a life expectancy of up to 20 years. The three sheep have grown up as pets and are therefore quite trusting. Their owner looks after her charges every day and provides them with everything they need. Please do not feed the sheep. **Welcome to HZB, Smartie, Dexter and David!** (arö)



## HZB DRAWS UP A COMPREHENSIVE GREENHOUSE GAS BALANCE SHEET

“We now know where we have to act”

A sustainable energy supply is one of the biggest social challenges at present. HZB is researching environmental friendly technologies, but this research itself produces emissions of its own. By 2035, HZB aims to be greenhouse gas neutral. One important milestone for this is the greenhouse gas balance sheet, which records the relevant emissions in detail for the first time. We talked with Climate and Energy Manager Carina Hanke about where things go from here.

### Why has HZB created a greenhouse gas balance sheet?

**Carina Hanke:** We have been debating intensively for many years already about how HZB can reduce its carbon footprint and achieve greenhouse gas neutrality by 2035. But that means we first have to know exactly how much emissions the centre produces and where they are produced. The greenhouse

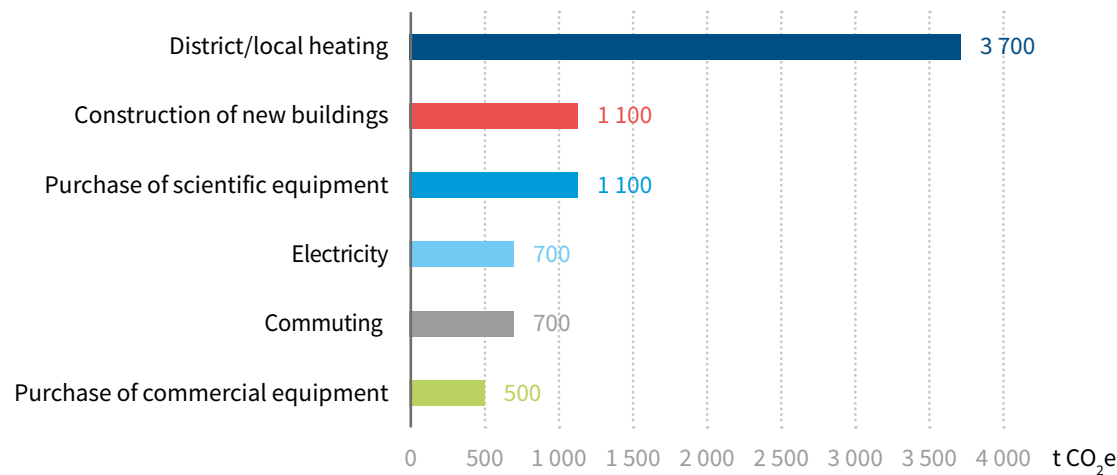
gas balance sheet is the right tool for that, and is the basis for HZB's climate protection concept.

### HZB had the greenhouse gas balance sheet verified by an independent auditing organisation. How did that come about?

We knew that we needed reliable and good data. Only then would the greenhouse gas



## BIGGEST CAUSES – over 500 tonnes CO<sub>2</sub> equivalents (CO<sub>2</sub>e, see p. 12) in the HZB greenhouse gas balance sheet



balance sheet be meaningful. The external audit verified the quality of the collected data.

### What approach did you take in drawing up the greenhouse gas balance sheet?

First, we defined which standard we would apply to measure the emissions. We opted for the Greenhouse Gas Protocol, which is used internationally. It defines various groups of emissions (see graphic on p. 10). We took not only the direct and indirect emissions into account on the balance sheet; we also factored in the emissions of the upstream and downstream value chain. It's voluntary for companies to do this. We could have put our renewable electricity down as zero emissions, for example, but that would have been

greenwashing. It was very important to me to create an honest greenhouse gas balance sheet.

### Is it difficult to measure the upstream and downstream emissions?

Definitely. You need many employees from all possible departments to gather data together. We took details on the food in the canteen, for example, as well as paper consumption. To finish with, we looked at only those emissions that contribute more than 1 percent to the total emissions of HZB. This materiality assessment directs your attention to the biggest sources of emissions. We now know what the main areas are, where we have to act.

# 9 895

tonnes of CO<sub>2</sub>-equivalent are the emissions at HZB in 2021

### What would you do differently for the next greenhouse gas balance?

Some data were not tangible, and we had to make assumptions. We can make big improvements in the data collection. So, we are trying to accomplish consistent and automated collection of data from the SAP system used at HZB. We have to develop that further.

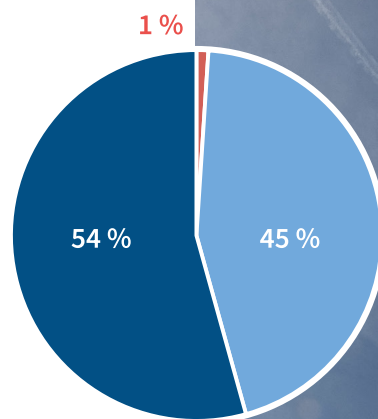
### Is there any result that surprised you?

I found it fascinating what the main causes are. The purchase of scientific equipment and the commuting of employees to work have a big impact on the balance sheet. I hadn't expected that. Also, the huge amount that heating contributes to the emissions surprised me.

## HOW THE EMISSIONS ARE DISTRIBUTED OVER VARIOUS SCOPES

The biggest share in 2021 was emissions produced by purchasing, new building constructions and commuting of employees. The direct emissions are low.

- Direct emissions (such as coolants, fleet, technical gases)
- Indirect emissions (such as electricity and district/local heating)
- Upstream emissions (such as commuting, purchase of machines, construction)



### How does HZB stand compared to other research institutes?

It's difficult to compare the balance sheets, seeing as it's voluntary to measure many of the emissions. But we can roughly say that HZB's emissions per employee are in line with the average for the Helmholtz Association.

### What is HZB going to do with the results?

We have identified the biggest causes and derived areas of action from there. Top priority is to reduce energy consumption. Some examples: we need to plan and build new buildings in a more climate-friendly way. But we also have to be more resource-efficient in procuring and operating the research equipment. Many colleagues have already given this some thought. What is important is that all employees must be aware that what

they do, on a daily basis, causes greenhouse gasses.

### How do you get the expertise of the employees involved?

If we take energy-efficient laboratories as an example, to make a difference there, the laboratory heads must sit down at one table across departments and think about what is possible. If anyone has a suggestion for optimisations, I would very much welcome them to come to me.

### Is it enough to rely on the employees' voluntariness?

We depend on the willingness and voluntary cooperation of our colleagues. Only through that can we achieve the goal. We want to develop guidelines and standards that help

## GREENHOUSE GAS BALANCE SHEET: ON THE WAY TO BETTER CLIMATE PROTECTION

us to act environmentally consciously, for example, by procuring more sustainably. Of course, we need to continue building new scientific equipment. For that, we should think about how devices, systems and products can be reused better.

**Despite all efforts: our research will also continue to cause greenhouse gases. We won't be able to get the emissions down to zero.**

That's right. We need new buildings and we operate research facilities; that causes emissions. There are already ideas on how the energy for operating BESSY II can be optimised. We have increased the requirements for sustainable electricity, and there is a project for utilising waste heat. On top of that, changes in the laws will ensure that

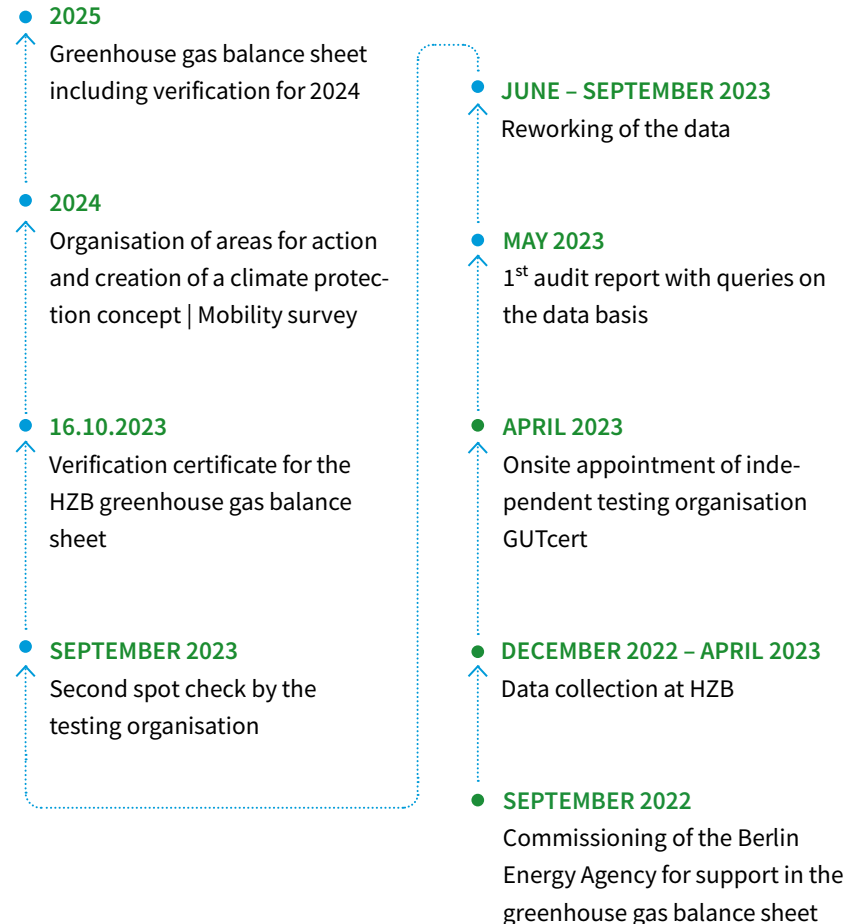
emissions drop in the future. For example, energy suppliers in Berlin must decarbonise the heat supply by 2045. That works to our benefit at the HZB site in Adlershof.

### What about the rest? Where do we stand on offsets?

We are currently working on offsetting business plane trips for the years 2020 to 2022. We have the approval of the funders and Management for this. But, offsets should always be the very last option. Another school of thought is so-called greenhouse gas sinks. Through our research into improving solar technologies, for example, we are contributing to the reduction of greenhouse gases. Although, there is still no basis for calculating this yet, but the topic will come up.

GHG Protocol

Verified Corporate  
Carbon Footprint



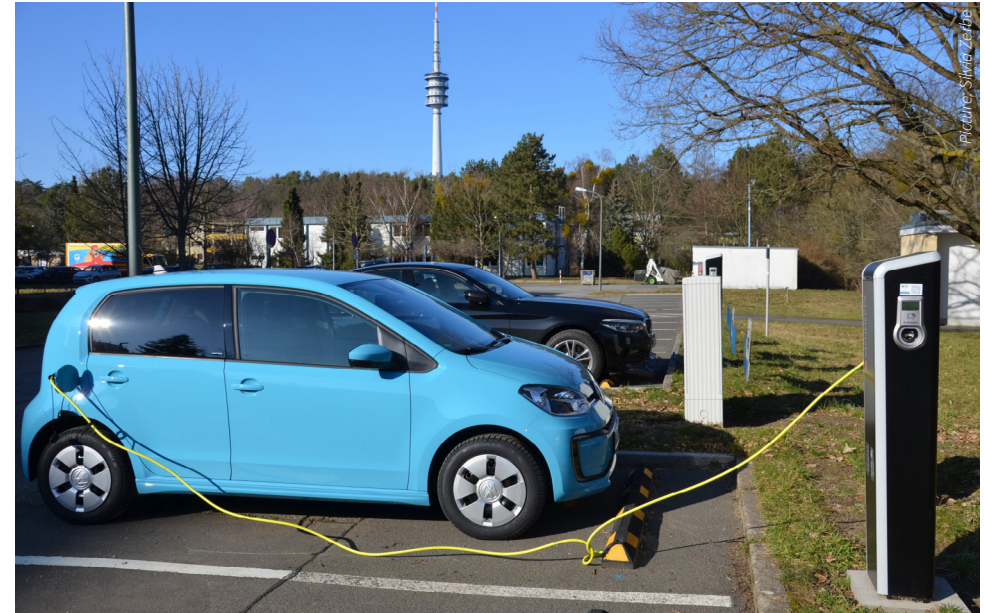
CO<sub>2</sub>e

## What does CO<sub>2</sub>e mean?

CO<sub>2</sub> equivalents (CO<sub>2</sub>e) are a unit of measure used to normalise the climate impact of all the different greenhouse gases. In addition to carbon dioxide (CO<sub>2</sub>), there are other greenhouse gases, such as methane or nitrous oxide, that have a much stronger impact on the climate. Therefore, these are recalculated into CO<sub>2</sub> equivalents, so that the emissions can be named under a single unit that allows them to be compared.

### Does HZB have to spend much money to get climate protection moving forward?

Many investments are due in the next few years anyway. Climate protection will also play a role in existing buildings. When facility upgrades and upcoming renovations are done, there will be improvements in the energy consumption, due in part to the higher legal standards. As one example, the Solargesetz Berlin prescribes the installation of PV systems into new buildings and roof renovations. We will respect that at HZB.



**New charging stations, climate-friendly vehicle fleet:** HZB has replaced its company vehicles in recent years. This has already reduced emissions.

### What has happened since the greenhouse gas balance sheet for 2021 was drawn up?

The heat supply in Wannsee was switched by Vattenfall to biomethane and landfill gas at the beginning of 2022. This means that a large item in the greenhouse gas balance will be absent in the next round of data collection. HZB's fleet of company cars has also been converted to lower-emission vehicles. We subsidise the Job Ticket for local public transport. We are also letting ourselves be audited as a bicycle-friendly employer right

now. Our aim is to reduce commuting emissions through this. We are on the right track, but there is still a lot to do.

Interview by  
Silvia Zerbe and Antonia Rötger.

## Some numbers on emissions

The greenhouse gas balance sheet provides interesting figures on our emissions and consumption in 2021. Even our own commuting and travelling behaviour plays a role.



9 895

**tonnes of CO<sub>2</sub>e** were produced as emissions by HZB in 2021.

856

**tonnes of CO<sub>2</sub>e** were produced by business flights by HZB colleagues in 2020, 2021 and 2022. These emissions must be offset.

69

**tonnes of CO<sub>2</sub>e** are attributable to refilling of coolants (chillers and refrigerators).

1 200

**kilowatts of waste heat** are produced by the storage ring hall. This heat is still released into the environment through cooling towers. In future, however, it will be used to supply heat to new buildings.

700

**tonnes of CO<sub>2</sub>e** are produced by the commuting of colleagues (based on the 2022 mobility survey).

30

**gigawatt hours per year** go into operating BESSY II.

3 600

**tonnes of CO<sub>2</sub>e** are expected to be saved after having converted the heat supply in Wannsee to biogas at the beginning of 2022.

148 117

**kilometres** of business train trips were travelled in 2021.

58 285

**kilometres** of business flights (domestic and international) were travelled in 2021.



Picture: Michael Setzplandt

## “We still have to keep banging away at it”

**It is Sunday evening, 8 pm, and you are about to start a night shift. What does shift work mean for you?**

**Nomi Sorgenfrei:** Night shifts are always difficult as a single parent. But it also means that I can work nights when the kids aren't with me. On weekends when my kids are there, or in the school holidays, I can't. While my partner can help me to a certain extent, it's still difficult. And I know it's tricky for any parent to juggle night shifts and kids.

**What are your concerns, as Equal Opportunities Officer?**

Of course, a major issue is making it easier to achieve work-life balance. It's especially difficult in science, where you have the pressure to publish and conferences to go to, and maybe your boss doesn't have kids and doesn't know the struggle. We also have to

**Nomi Sorgenfrei is a physicist and beamline scientist at BESSY II. In January 2024, she started her role as Equal Opportunities Officer at HZB**

find ways to get young women interested in the MINT fields. Another concern of mine is the pervasive sexism. Every year in November, the UN's Orange the World campaign raises awareness of violence against women. Violence against women is, sadly, still very common.

**How do you want to tackle it?**

We have to increase awareness about sexualised violence and mobbing at the workplace. And that's where the OU heads come in: they must ensure safe working environments and be trained to be sensitised of sexualised

violence and mobbing at the workplace. There is much to be done.

**How far along are we in matters of equality?**

It's really one of those society things. A lot of people shut their eyes and act as though everything's just fine. Equality has not been achieved yet, despite all our efforts.

Many just sit back and think, it'll all work out. But equality is like an eternal construction site. We still have to keep banging away at it.

**What motivated you to apply as Equal Opportunities Officer?**

Reality. The need is real, even at HZB. Because of my trans identity, I have experienced myself how starkly different it is to be perceived as male or female. It is my great concern to combat this inequality. There is still a long way to go for true equal opportunity!

*Interview by Ribal Zeitouni.*

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**Nomi Sorgenfrei was also interviewed during Diversity Month (in German):**

# How can we work well together?

This was the question that started the first discussion rounds on diversity and participation at HZB.

What can we do together to advance our corporate culture?

**I**n October 2023, the Diversity Officers invited to discussion rounds in Adlershof and Wannsee. The aim was to identify topics that we should address more intensively at HZB.

One important aspect addressed in both discussion rounds was the need to pay more attention to diversity and equal opportunities in the recruitment process. How can we ensure that we attract the best people for our teams? It starts with the job advertisements. How can they be formulated so that more women or other target groups feel addressed? How do we make non-discriminatory choices when we are unconsciously

influenced by gender, age or external characteristics? This raises many practical questions. We don't need to know the answers immediately. Rather, it is important that we ask ourselves such questions together.

Another intensively discussed topic was how we can help new employees – especially those from abroad – to settle in quickly at HZB and feel welcome. Good onboarding is the be-all and end-all if you want to retain talent in the first few months. How can we succeed in creating a good sense of belonging? One colleague reported that they found it difficult to find their way around in the first few months. However, if you are not familiar

with the processes in Germany and at HZB, you have no choice but to keep asking. Questions were not always answered in a friendly manner. We can all do something about this. What helps is to put yourself in the other person's shoes. At the same time, onboarding must be organised in such a way that it is not left to chance how well a new colleague gets on at HZB. Developing suggestions for this is a sensible task for a new Diversity Lab.

It also emerged that the leadership culture is very important. Managers are responsible for ensuring that diversity is lived in a team and that different opinions are valued. And they are crucial for recognising and promoting talent. It was discussed whether there should be mandatory management training programmes. The topic of leadership culture is at the top of the Management's agenda. The discussion rounds have shown: How



## NEXT DATES IN MARCH

20 March (Wannsee) at 1 pm

21 March (Adlershof) at 1 pm

The Diversity Officers invite you to an open discussion round every six months. Of course, they can also be contacted at any time in between. Get involved, because your experiences are important.

### CONTACT US

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we can advance the work culture at HZB is also in our own hands. We need to keep talking about the structural requirements - and break down barriers that exclude people.

■ BY SILVIA ZERBE



Picture: Michael Setzplandt

Standing up for more diversity and equal opportunities is a task for the entire HZB. Ana Anselmo (left) and Silvia Zerbe (right) welcome ideas, suggestions and feedback.

The image features two flags flying against a bright blue sky with scattered white clouds. On the left is the Ukrainian national flag, consisting of a blue top half and a yellow bottom half. To its right and slightly lower is the flag of the European Union, which is blue with twelve yellow stars arranged in a circle. A dark blue rectangular box is positioned on the right side of the image, containing white text.

GREEN DEAL UKRAINA

# The green rebuilding of Ukraine

As an EU candidate country, Ukraine is obligated to initiate a series of reforms and develop a restoration plan, all in the midst of a Russian war of aggression. A German-Ukrainian-Polish project aims to help make the climate and energy policy of Ukraine fit for the EU.

The EU summit on 14 December 2023 paved the way for accession negotiations with Ukraine. The heads of government of the Member States gave the green light to start formal accession talks with Ukraine and the Republic of Moldova. EU Council President Charles Michel called this decision a “historic moment”. The candidate countries must now transpose the EU’s rules and regulations in all areas, including energy and climate policy, into their national law. The complex accession process can take many years. For Ukraine, time is running out: lasting peace is only possible with EU anchoring. A new trilateral project by Helmholtz-Zentrum Berlin with partners from Ukraine and

Poland aims to support the country on its way to EU membership and climate neutrality. The aim of the “Green Deal Ukraina” project is to establish an independent think tank in the capital Kyiv by 2027 to advise Ukrainian decision-makers on green rebuilding and EU accession. The first research results of the project, including an energy and climate roadmap for Ukraine on its way to the EU, were presented at a high-level event in Kyiv in October 2023.

It is essential that the project, funded by the Federal Ministry of Education and Research, be neutral and scientific, says Susanne Nies, Project Manager at HZB. “Through our work, we want to help Ukraine to organise the green rebuilding of the country in the best



Meeting of the project team at the first Green Deal conference in Kiev in October 2023 (from left to right): Vlad Mikhnych, Cheryl White, Susanne Nies, Olha Bondarenko, Georg Zachmann and Alisa Schubert.

50

percent of Ukraine's energy infrastructure was destroyed by Russian attacks.

way according to its own vision.” In addition to policy analyses and data modelling, plans also include training programmes for Ukrainian decision-makers.

### A Herculean task

As Susanne Nies sees it, Ukraine is facing a Herculean task, namely to prepare a country with over 40 million people and a huge land area in the heart of Europe to join the EU, while at the same time having to defend itself against a brutal war of aggression. The Ukrainian energy system faces major challenges:



**Great political interest:** Olha Bondarenko (left) and Susanne Nies (right) present the Green Deal Ukraine project at the conference of the East German Minister-Presidents at HZB.

the energy intensity of the Ukrainian economy is twice as high as the EU average; energy prices are subsidised and therefore too low; and many state-owned energy companies are bankrupt.

In the winter of 2022/23, more than 50 percent of Ukraine's energy infrastructure was damaged by the Russian attacks, leading to blackouts and shortages in the water supply and heating. As a result, the Ukrainian people spent on average 35 days in the dark and the cold. Around 90 percent of Ukraine's wind power capacity and up to 50 percent of its solar capacity have also been affected by the war. Most of the facilities are located in the occupied territories or directly in the war zone.

### Huge potential for renewables

Over a million diesel generators helped the country make it through last winter, says Nies. "But that is not the future of the country. The future lies in clean energy and greater decentralisation, as well as improving energy efficiency," the energy expert explains. According to the Ukrainian Academy of Sciences, the potential for renewable energies in Ukraine is 874 gigawatts. "That corresponds to three times the total installed capacity in Germany," emphasises Susanne Nies. "But generation is not the end of the story: there is still a lot to be done with regard to consumption in order to get closer not only to the climate targets, but also to greater economic efficiency."

874

gigawatts is the potential of renewable energies in Ukraine.

Before the war started, Ukraine had already raised its climate targets substantially and made extensive investments in renewable energies. According to a report by the Net Zero World Initiative, Ukraine aims to cut emissions by 65 percent by 2030. By then, the energy mix should comprise 27 percent renewables (compared to 11 percent in 2020); by 2035 Ukraine wants to stop burning coal to generate electricity; and by 2050 renewables should make up more than 65 percent of the energy mix. These targets are set out in a report by the same initiative and the Ministry of Energy, which was presented at the World Climate Conference (COP28) in Dubai

Continuation on page 22

The project Green Deal Ukraina aims to establish an independent energy and climate think tank in the Ukrainian capital Kyiv by 2027. It will advise decision-makers on Ukraine's green rebuilding and accession to the EU. The project partners are Helmholtz-Zentrum Berlin (HZB), Polish think tank Forum Energii, Ukrainian think tank DixiGroup and Ukrainian environmental foundation EcoAction.

Plans include providing Ukrainian decision-makers with training programmes on EU energy and climate policy as well as data analyses and policy advice. The trilateral project, funded by the Federal Ministry of Education and Research, is based in Berlin, Kyiv and Warsaw. It was launched in June 2023 and will run for four years.

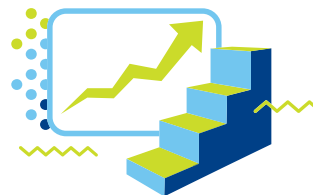


**POLITICAL ANALYSES AND ADVICE**



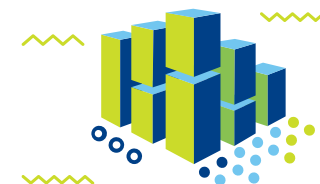
Target: Underpinning sustainable energy and climate policy decisions

**BUILDING OF CAPACITIES**



Assisting in the building of capacities at all levels: including government, public authorities, businesses and universities

**DATA AND MODELLING**



Providing relevant and up-to-date data; Forecasts with state-of-the-art modelling



“We want to open an office in Kyiv in 2024. This sends a clear signal and takes us a crucial step closer to our goal of establishing an independent think tank.”

Susanne Nies

in December 2023. The Ukraine Reconstruction Conference to be held in June 2024 will report on the status, and HZB’s project will play an active part in this.

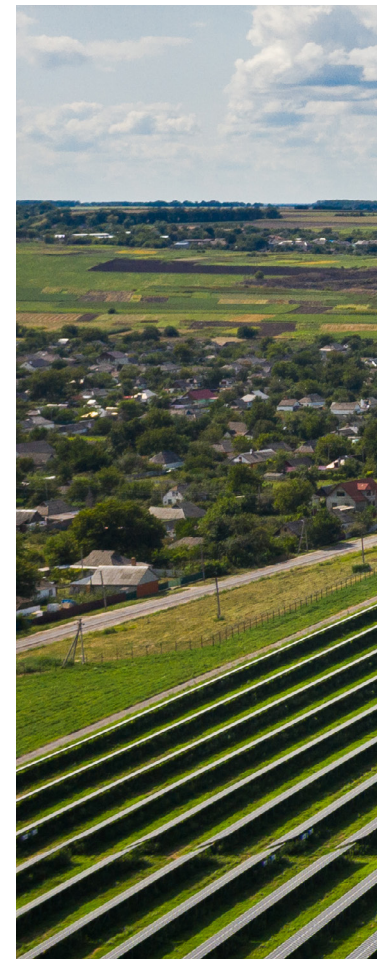
### Points of contact for scientific cooperation

Susanne Nies explains that the project will support Ukraine in its goal of becoming a hub for clean energy, integrated into the EU network through strong infrastructures. She also sees profitable opportunities for the research and development of clean technologies on all sides, especially by connecting the scientific worlds of Germany, Ukraine and Poland. HZB also happens to be a world leader in the development of thin-film solar modules

made from novel material combinations. These could, for example, present points of contact for future scientific cooperation. The initiative has a lot planned for 2024: the Green Deal Ukraina project will establish an office in Kyiv. And the team has grown to almost 20 employees in Germany, Poland and Ukraine since June 2023. The training programme starts with a summer school in western Ukraine, and further research work is already underway. “The opening of the office in Kyiv alone sends a clear signal and takes us a crucial step closer to our goal of establishing an independent think tank,” Susanne Nies is pleased to report.

■ BY KOMILA NABIYEVA

(updates Susanne Nies and Silvia Zerbe)

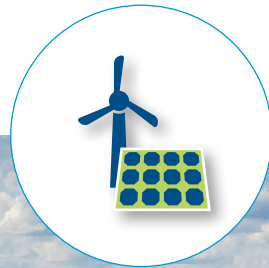


**UKRAINE'S PATH TO A  
CLIMATE-NEUTRAL  
ENERGY SYSTEM**

Targets given in  
the report of the  
Net Zero World Initiative

27

percent: by 2030, the  
share of renewable  
energies should be  
27 percent  
(in 2020: 11%).



65

percent reduction:  
by 2023, emissions  
set to drop by  
65 percent.



0

emissions  
from burning coal  
in 2035.



## Still plenty of construction at HZB in 2024

In 2024, construction work will begin in Adlershof for the Technikum at BESSY II as well as for CatLab and its supply building. New storage halls are being built in Wannsee. What are the possibilities for developing future working environments? The project “New Work at HZB” has been launched to find out.

Next to the heavy-duty hall behind BESSY II, a Technikum is going to be built in 2024. This is where the teams who prepare the experiments at BESSY II will later work, for example specialists from Sample Environment, Electronics or Optics. At the experimental hall, the biolab of the MX-Team will be raised by one storey. Construction works for expanding the HySPRINT labs and the KOALA lab in the building for perovskite research (Building 12.8) were completed at the end of 2023. Starting in 2024, things will continue there with the renovation of the office rooms. In the middle of 2024, construction of the

CatLab building will commence on the grounds behind the BESSY II storage ring. The central supply building will go right alongside it. The plot is already prepared; electricity, water, gas and heat lines are to be laid underground in the first half of the year. “We have the climate targets in mind for all construction projects,” says Head of Facility Management Robert Müller. The CatLab building, for example, is designed as a “hybrid timber” construction: concrete will be used in the laboratory areas, while the office space will be built from wood. It is also planned to have a research photovoltaics system on the roof as a real-world lab, which the specialists of

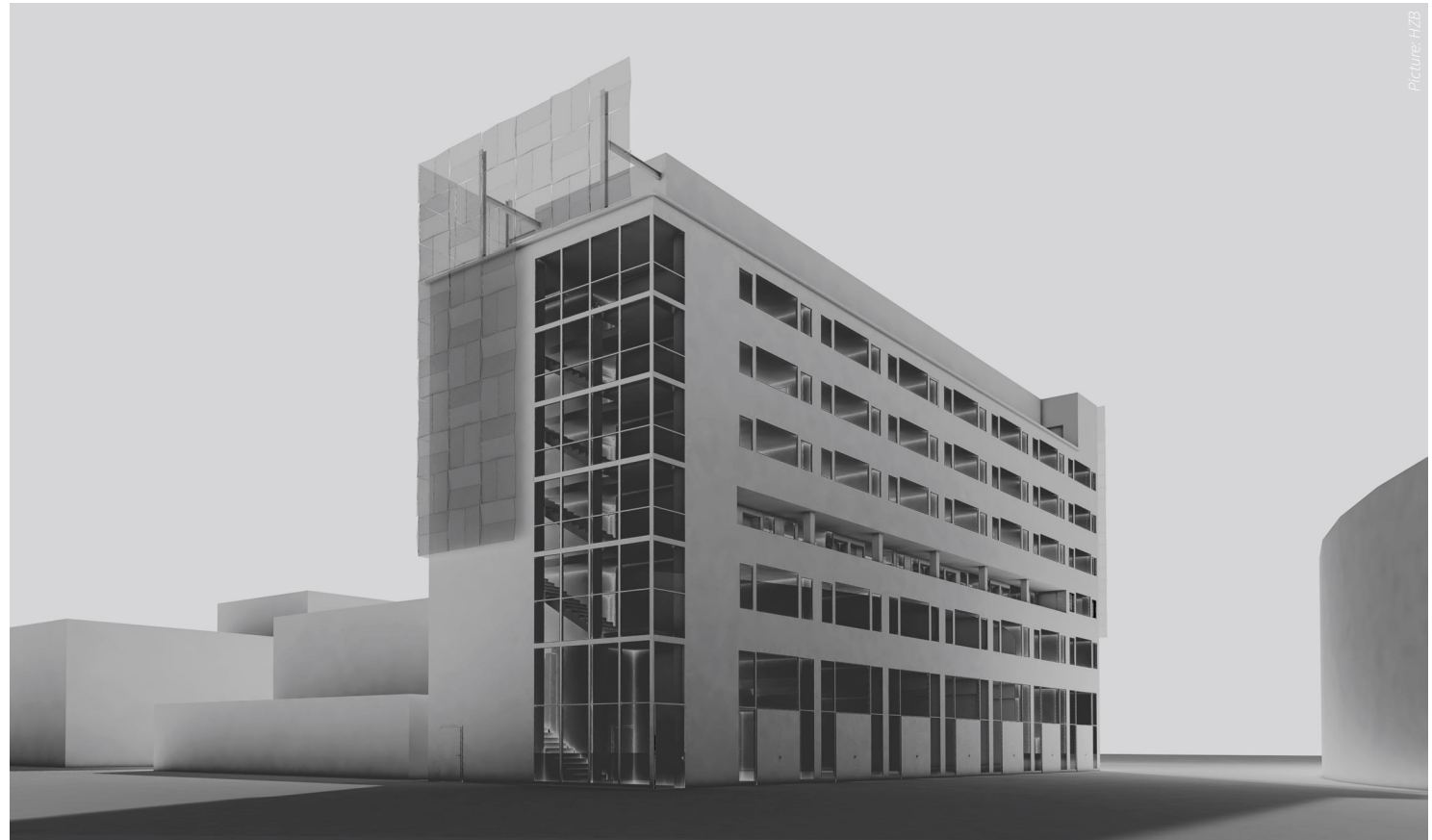
the Consulting Office for Building-Integrated Photovoltaics (BAIP) at HZB will manage. Both the CatLab building and the Technikum shall fulfil the silver standard of the Assessment System for Sustainable Building (BNB Silber). “In addition, we have launched a project for heat recovery at BESSY II. Heat is

- Planned new construction projects in Adlershof:**
- projects in realisation
  - projects in planning
  - 1 – supply building 2
  - 2 – CatLab building
  - 3 – Technikum
  - 4 – service yard
  - 5 – urban development ideas section
  - 6 – Innovation Center
  - 7 – Data Science





**Architectural design for the new Technikum in Adlershof:** laboratory and office space is being created here to prepare experiments at BESSY II.



Picture: HZB

produced at about 27° Celsius during operation and, instead of letting it go out the cooling tower, we will use it as the primary heat source for the low temperature heating of the new buildings,” Robert Müller explains.

### **Campus Wannsee: The dismantling of BER II**

On Campus Wannsee, the top priority is the dismantling of the research reactor BER II.

This will require, among other things, a new storage hall. The Central Office Radioactive Waste (ZRA) must also expand its storage capacities, meaning a new hall is to be built there as well. Renovation of the Wannsee canteen will resume in 2024: the canteen building has already been completely gutted, and is now ready for the real interior finishing work. “We want to conclude this measure by mid-2025,” Müller says, adding: “In 2024, we

will continue to refine the future visions for both sites and get other future construction projects for HZB off the ground.”

### **Future work environment at HZB**

All this will only work with good dialogue and lots of communication, Müller is convinced. The needs for ordinary office space may change in future, for example, given things like the regulations for mobile working. “In

our project “New Work at HZB”, we will also be discussing in 2024 how we can make the future working environments at HZB properly attractive.”

■ BY ANTONIA RÖTGER

## INVITATION FROM ADMINISTRATION:

# The “Open Office” event promotes dialogue

The “Open Office” meeting is a place where employees from all departments can get to know one another and discuss all manner of things. Antonia Gott from the People Operations Department designs this event in a team, and explains the idea behind it all.

### What is the idea behind “Open Office”?

**Antonia Gott:** Well, there is the “Open Door Policy”, which symbolises that anyone is always welcome to pop in for a quick talk. These informal chats are insanely important for building trust and cohesion among colleagues. In times of crises and change, especially, the feeling of belonging is essential for promoting motivation. Then there are many who are also working on a mobile basis now. And so we are faced with the question: How does it affect us? With “Open Office”, our goal is to create a platform that gives everyone from all the different departments a venue to get together and talk things through.



Antonia Gott started at HZB in August 2023. She is the Consultant for Processes and Strategy in the People Operations department.

### The first event took place in autumn 2023, where the theme was “Admin meets Science”. What was it about, exactly?

The idea was to bring employees from administration and science together so that each would have the chance to learn more about the work done by the other. Science

and administration have different working frameworks and dynamics. It is crucial to understand these better and to find common ground. In fitting with this, there was a prompt on the topic of team building. We delved into this by walking through a thought experiment: What would happen if all of HZB were one team? What would make our team successful?

I really enjoyed the first round, because I got to talk with researchers who explained to me what was important to them. This interaction was very informative for me.

### So, what’s next?

Administration would like to offer the “Open Office” format twice a year, alternating between Wannsee and Adlershof. We want to work together to shape HZB, and look forward to the next “Open Office” in spring 2024 in Wannsee.

[Interview by Florentine Krawatzek](#)

## PERSONALIA



**ANNIKA BANDE**

is a Professor at Leibniz Universität Hannover and has been teaching at the Institute of Inorganic Chemistry since the winter semester 2023/24. She heads a research group at HZB.



**JOACHIM BRETERNITZ**

has been appointed to a W2 professorship in the Department of Chemical Engineering at FH Münster. He previously worked in the Department of Structure and Dynamics of Energy Materials at HZB.



**YAN LU**

has been appointed to a joint W3 professorship at the University of Jena and is Co-Director of the new Helmholtz Institute HiPOLE.



**WEI NIE**

joined the group of Christopher Kley (FHI and HZB) as an Alexander von Humboldt Fellow in summer 2023. He is investigating the surface structures of electrocatalysts.

## OBITUARY

### Dr Hans-Anton Graf



We mourn the loss of our former colleague Hans-Anton Graf, who passed away on 30 December 2023 at the age of 78 after a prolonged illness but also after an eventful life.

He joined the former Hahn-Meitner Institute in 1977 in the working group of Hans Dachs, and dedicated himself to instrumentation for neutron scattering. Among other things, he took charge of the construction of the E1 3-axis spectrometer at BER II and its user support. At the end of 2005, he became head of the BENS User Office and, in September 2010, he went into retirement. Hans-Anton Graf was a valued advisor in a number of committees, including the German Committee Research with Neutrons (KFN), the instrument subcommittees of the ILL and expert panels. He was also greatly dedicated to sharing his extensive knowledge with young scientists.

We will always remember his commitment to neutron scattering, his foresight and expertise, and especially his calm, friendly and sociable nature.

We wish his family much strength during this difficult time.



## CONGRATULATIONS



Picture: Silvia Zerbe

### ANA PALACIOS SAURA

She was awarded a poster prize at the 2023 autumn meeting of the Materials Research Society (MRS) in Boston. She also won a poster prize at the IUCr26 in Melbourne.



Picture: Private

### YAOLIN XU

received the Young Researcher Award ZEISS Microscopy. He is developing a cryogenic electron microscopy workflow. It helps to decode nanoscale electrochemical deposits in lithium-sulphur batteries.



Picture: Silvia Zerbe

### DAVID MATZDORFF

won the “Inorganic Chemistry Poster Prize” at the 26<sup>th</sup> International Union of Crystallography Congress (IUCr) in Melbourne.



Picture: Kevin Pucis

### MICHELLE BROWNE

received two prestigious awards: the Curious Mind Award from manager magazine and 3rd place in the Academics Young Talent Award 2023. Read more about Michelle Browne's work in the cover story.



Picture: Silvia Zerbe

### TECHNOLOGIETRANSFER-PREIS DES HZB

**Kári Sveinbjörnsson** and **Bor Li** (both with medals) were honoured with the HZB Technology Transfer Award. Together with PV manufacturer Qcells, they further developed the tandem solar cell technology to such an extent that Qcells invested in the construction of a pilot line in Saxony-Anhalt. In October 2023, both researchers received the prize of 5,000 euros for this successful transfer to industrial application.





## PICTURE RIDDLE

The beautiful side of winter: the sunrise transforms BESSY II light source ring into a marvellous snowy landscape. Can you find the 7 mistakes? Here's what you can win:

1 x HZB umbrella, 1 x Romme card game\*, 1 x Skat card game\* (\*special edition with scientists)

**Closing date: 15.04.2024**



Please mark all the mistakes clearly in the image and send us an email to [lichtblick@helmholtz-berlin.de](mailto:lichtblick@helmholtz-berlin.de). Alternatively, you can send your solution by internal mail or post to: **Helmholtz-Zentrum Berlin, keyword: lichtblick competition, Communications Department, Hahn-Meitner-Platz 1, 14109 Berlin**. We will notify the winners by email. With your entry you agree that your name will be published in the next issue. The legal recourse is excluded.

### THE WINNERS OF THE LAST ISSUE – THE DRAW HAS DECIDED:

First place: Jan-Simon Schmidt

Second place: Mona Witting

Third place: Marc Herzog



## RECIPE FROM LEBANON

### Ingredients (4 servings)

#### Dough for the flatbreads:

- 1 teaspoon dry baker's yeast  
in 150 ml warm water
- 250 g flour
- 1 teaspoon salt
- 1 teaspoon sugar
- 3 tablespoons olive oil
- Lemon (to serve)

#### Zatar (topping 1):

- 3 tablespoons Zatar (spice blend  
with thyme and sesame)
- 3 tablespoons olive oil

#### Cheese (topping 2):

- 120 g Mozzarella (grated)
- 120 g Halloumi (grated)

## بالصحة والعافية

Bon appétit!



# Manakish – a typical Arabian breakfast

By Ribal Zeitouni

### Dough

1. Dissolve the yeast in warm water. Mix the flour, salt and sugar in a bowl. Make a well in the centre and pour in the dissolved yeast and 2.5 tablespoons of olive oil. Knead everything well with your hands for about 5 minutes until you have a smooth dough. Shape into a ball and place in a large bowl. Brush with olive oil and cover the bowl with cling film. Leave to rise in a warm place for approx. 1 hour.
2. Roll out the risen dough into a long shape and divide it into four equal pieces. Shape the pieces into flatbreads on a baking tray lined with baking paper. Cover them with a clean tea towel and leave them to rest while you prepare the toppings.

### Zatar topping

Mix the Zatar with the remaining olive oil. Brush each flatbread generously with the Zatar-olive oil mixture. Place in the oven for about 8 minutes until golden brown. Drizzle with lemon and serve hot.

### Cheese topping

Sprinkle the grated cheese generously over the flatbreads. Depending on your taste, you can also use other cheeses, e.g. Kashkaval or Edam. Drizzle with a little olive oil to taste. Place in the oven for about 8 minutes until golden brown. Sprinkle with lemon and serve immediately.



Picture: Adobe Stock



Picture: Silvia Zerbe

### Ribal Zeitouni

#### Communications Department

Ribal Zeitouni grew up in Vienna and his parents are from Lebanon. Together they love Lebanese cuisine. Ribal worked as a web editor in the Communications Department until January 2024.



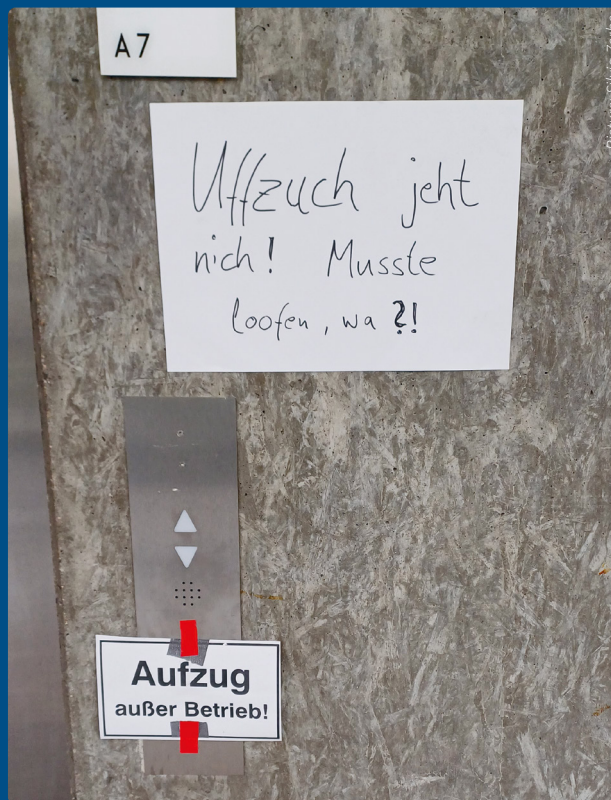
## Notes of HZB

### Brain instead of muscle power



Picture taken in the central workshop in Wannsee.

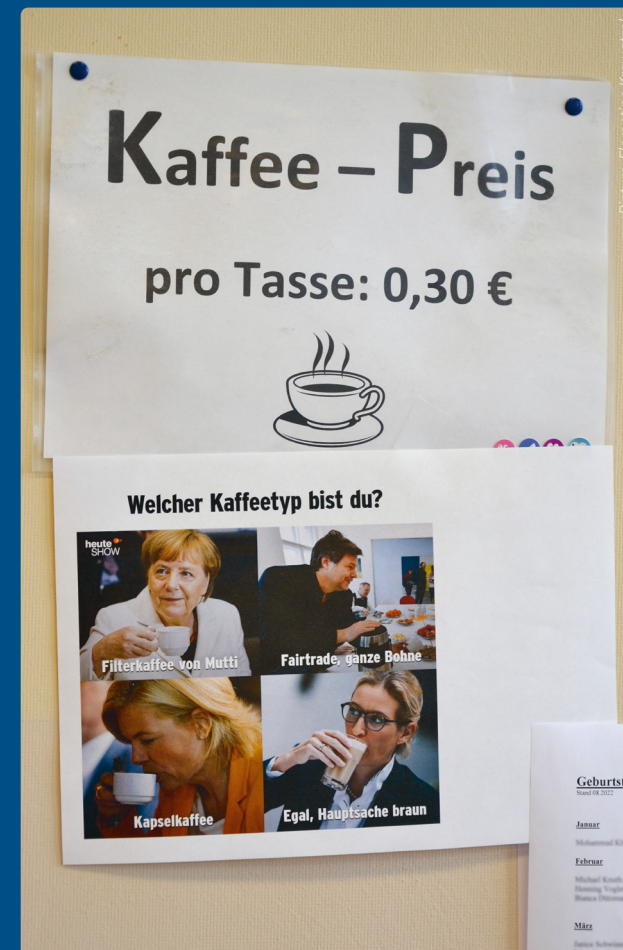
### Loofen is jesund\*



This is bilingualism in practice (October 2023). The lift in the BESSY building has now been repaired.

\* Berlin slang for “walking is healthy”

### Greetings from the Barista



To find out more about your coffee-type, check this out in the central workshop in Wannsee.



What funny notes at HZB catch your eye?  
Please send them to: [lichtblick@helmholtz-berlin.de](mailto:lichtblick@helmholtz-berlin.de)