

VOLKSWAGEN

AKTIENGESELLSCHAFT

Shift



STRATEGY *How we're finding the right path to the future in difficult times* **CULTURE** *How people at the Volkswagen Group are preparing for the journey*

2018

Shift

The Group is undergoing a transformation. It is a process, which does not always follow a straight line, but has rough edges – and sometimes seems to be going in circles.

Shift is becoming part of the chronicle.

What we need is a culture of constructive contradiction. Smart minds are called upon. We also need the courage to participate in the public debate – with carefully thought-through and convincing arguments.

Shift encourages you to do that, because those who do not join the debate will not find out where the company is in the transformation process – and where it could be.

shift@volkswagen.de

Editorial

Dear Readers,

We have focused our thoughts and discussions on a pair of terms of which they say that one eats the other for breakfast. Culture, this suggests, is the force proper. Yet culture needs a framework that ensures it. Compliance, culture, or integrity programs are hardly ever established because people are bad, but rather because even a strong, good culture needs a framework that protects it against abuse and crisis.

This is something a good strategy can achieve. So culture would be ill-advised to eat it. But if the strategy has set no or the wrong guardrails, culture must protect the individual – a mistake from which you learn is an opportunity for a new beginning. An organization cannot practice this often enough.

“We cannot practice learning from mistakes often enough.”

In a best-case scenario, this results in a new framework in the form of new goals or priorities, but also new modes of operation. There are places in our Group where this is exactly what is happening. However, disappointments happen, too. We must let go of a concept of achievement and success that is based on climbing the corporate ladder. And if the guardrails are not good enough yet, we must develop new ones instead. You should read the third issue of *Shift* also as a reflection of this target image.

On the first pages, the new General Secretary of Volkswagen AG, Jürgen Rittersberger, talks about the challenge of properly refining a good corporate strategy. As far as the transformation is concerned, he focuses on clear responsibilities and committees that work transparently. In their first auditor's report, Larry D. Thompson and his team address the most sensitive issues, and make recommendations for the next steps towards improving structures and processes, which the cor-

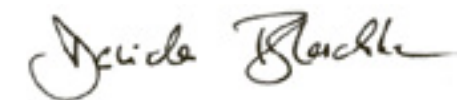
poration must take very seriously. Dr. Thomas Meiers explains why.

We observe a changing culture, and accompany a young colleague through a week in the life of her boss. In an interview, Prof. Dr. Jutta Allmendinger explains how women can attain executive positions and change organizations. We ask about the guardrails for ethical design, about the responsibility of companies and universities concerning the separation of economic and scientific interests – and about the responsibility CEOs have to exercise their political role.

We take you along into rural areas, where mobility is again becoming a social issue; to the past of our Brazilian subsidiary; and to the artisanal mining communities in the Democratic Republic of the Congo for a fact-finding mission into the supply chain of electric vehicles.

Shift is a corporate magazine. However, our external authors express their personal opinions freely. We thank them for their trust and the numerous people in our Group who were involved in producing this issue for their help and assistance.

Kind regards,




Daniela Blaschke, 30, works in Public Affairs. Her proposal for advancing the corporate strategy: mobility services in post-urban spaces.

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PUBLISHING INFORMATION

PUBLISHER
(Responsible according to the German press law)
Volkswagen AG
Dr. Thomas Steg
Head of Public Affairs
PO box 1882
38436 Wolfsburg
Germany

PROJECT MANAGEMENT
Daniela Blaschke
Public Dialogue
Public Affairs

CONCEPT AND REALIZATION
Rat für Ruhm und Ehre GmbH,
Düsseldorf/Berlin

Chief Editor
Sepideh Honarbacht

DEVELOPMENT AND CREATIVE DIRECTION
Angela Ziegler (ZIEGLER, Berlin)

Image Editor
Anne Grobler, Berlin

Layout
Peggy Seelenmeyer, Angela Ziegler

STAFF FOR THIS ISSUE
Project management
Tanja Iwas (Rat für Ruhm und Ehre)
Anika Schulze (Volkswagen AG)

Text
Daniela Blaschke, Anette Frisch,
Sepideh Honarbacht, Martin
Höfelmann, Daniel Kastner, Dr. Thomas
Meiers, Ralf Pfitzner, Valdis Wish

Images
Michael Feser, Inga Haar, Ériver Hijano,
Stuart Kinlough, Uli Knörzer, Gutentag
Hamburg, Simon Prades, Sébastien
Thibault, Maximilian Virgili, Jan Philip
Welcherer, Mario Wezel

COPYEDITING
Gabi Kämpken
(correc-tour online,
Bad Zwischenahn)

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twentyfour seven
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“It’s important to see the overall picture”

The business figures are good – paradoxically so, some say. The transformation of the Group is difficult terrain for the new management team. Jürgen Rittersberger must make sure objectives are clear and operations run smoothly in a complex organization.

Photo — Jan Philip Welchering

Shift: Mr. Rittersberger, you have been the new General Secretary of Volkswagen AG since the beginning of September 2018. What are your tasks?

Jürgen Rittersberger: They lie, above all, in the coordination of the affairs of the Management Board and the Supervisory Board. Among our other duties, my team prepares all the meetings of the two bodies. That may sound easy to an outsider, but it’s a complex task, and the Group’s ability to make coordinated decisions on the basis of well-founded information depends on how well we do our job. Then there are other issues. The airport, the Air Service in Braunschweig, is one of them.

You are also the head of Group Strategy. Michael Jost is another important strategist in the company. How do you work together?

The areas I handle include strategic planning for the Group and strategy controlling, industrial cooperation, mergers and acquisitions, evaluating

Jürgen Rittersberger, 46, has been named General Secretariat and Senior Vice President Group Strategy at Volkswagen AG effective September 1, 2018. A native of Mannheim, he worked for Porsche AG beginning in 2002, most recently as General Representative. Previously, he was employed in controlling at Philipp Holzmann AG and DIBAG Industriebau AG. His company car is a T-Roc, “a great car – and the most quickly available new model out of the company car pool.”

new business fields, and sustainability. At Group Strategy, we develop the playing field on which our brands move. We examine new business models for the entire Group and interesting joint ventures with which we can create synergies or move into new markets and business areas. Mobility services are part of this, as is e-mobility, especially its general parameters. These include charging infrastructure and battery technology. Michael Jost is responsible for product strategy and brand positioning in the Group, among other duties. We work together very closely – there isn’t any other way to go about it.

“We have to set ambitious goals, but they must also be feasible. Colorful charts won’t do.”

The twelve Group brands also have their own strategists. How do you handle their different concerns? Obviously, every brand's primary concern is its own development. There will always be conflicts with others. But we have committees and processes for dealing with this, in which these issues have to be discussed and ultimately resolved in the best interest of the Group overall. Porsche recently announced that it will no longer offer diesel cars, and Bentley will stop selling them in Europe. But this isn't a Group-wide policy yet. In the end, does each brand simply do what it wants?

No. In this case, it is in these two brands' specific interest to make that decision. It's a decision that can't be applied one to one to all the other brands, especially not to our volume brands or the utility vehicles in our portfolio. But the point is the standard process: there are clear definitions for the brands and the Group as to which decisions are made in which committee and when the Group Management Board has the final say. Audi and Porsche are two brands that now also have assumed responsibility for Group issues. This promotes cooperation. Discussions in the committees are becoming more and more open and transparent. How exactly will you shape the strategy process in the future? We have to set ambitious goals, but they must also be feasible. Colorful charts won't do. The individual measures we take must be clearly defined. This is the only way we can develop a timetable. And it's just as important that we regularly review the steps we've taken and determine where we are on our journey.

“Sustainability is being connected more closely with other strategic goals.”



The Group is being restructured.

In other words, making progress measurable? Yes, we need to monitor our results, so that we know we're headed in the right direction. And how long is such a timetable valid? The days when you set a strategy for the next ten years are over. Especially in these times of transformation, this just doesn't work anymore. We check our strategy regularly, at least once a year. Then we decide if we have to re-adjust? Or perhaps even fundamentally change direction in certain respects? What does that mean for the TOGETHER 2025 strategy?

Typically, three to five years before you reach the strategy horizon, you start checking how the strategy should be fundamentally further developed. Since the middle of this year, the Sustainability team has been working in the Group Strategy division. Does that get it close enough to the product? The purpose of our reorganization is to synchronize and connect sustainability more closely with other strategic goals. After all, it isn't just our products – our cars – that have to be sustainable. The issue is much larger. We have to look at the entire Group and, for example, put more effort into ensuring sustainability in our factories and supply chains. Climate protection is our most important sustainability issue. But sustainability also comprises other issues, like environmental protection, or our responsibility to our employees and society. Impulses for sustainability are very important for our entire Group strategy.

Shift

Photo: Volkswagen AG; icons: Volkswagen AG; * Allocation will be verified, as of October 2018

No mini-corporations

With the new corporate structure, the control duties in the Group are spread across several shoulders. The company is organized into four brand segments: Volume, Premium, Sport & Luxury, and Truck & Bus.

Seven principles have been defined for the collaboration among the brand segments:

- Strong brands due to autonomy and responsibility
- The CEO of the lead brand assumes the chair of the supervisory boards of the other brands in his or her segment
- Control is exercised via a strengthened strategy process
- Slim performance checks are carried out regularly
- Operational responsibility remains with the respective brands – there is no functional control by the lead brand
- Nor is there a control level for the brand groups, i.e., there are no mini-corporations: the responsible individuals of the various brands meet and settle unresolved issues
- The Group maintains complete transparency and remains in charge of the brands: the reporting lines within the Group remain intact

VOLUME	PREMIUM	SPORT & LUXUS	TRUCK & BUS
 Volkswagen	 Audi	 PORSCHE	
 ŠKODA	 LAMBORGHINI*	 BENTLEY	 SCANIA
 SEAT	 DUCATI*	 BUGATTI	Power Engineering*
 Nutzfahrzeuge			
MOIA			

Report on changes

Larry D. Thompson, the Monitor appointed by the U.S. Department of Justice, is making sure that Volkswagen fulfils the requirements of the settlement reached in 2017. His first public report concluded that, although the Group has made a start, it still has far to go.

Having examined a huge array of documents and attended many meetings, Larry D. Thompson published his first annual report as the Independent Compliance Auditor in August 2018. In it, he analyzed the status quo at Volkswagen, and came up with seven recommendations for Volkswagen AG, AUDI AG, and their American affiliates to follow to ensure compliance with the obligations of the Third Partial Consent Decree – the civil law settlement – by 2020. Priority was placed on measures to improve compliance, systemize the reporting process, and promote ethical conduct. We will outline several of the challenges in the following pages, which include recommended actions as listed in the published First Auditor Report.

Thompson has a dual role as both auditor and Monitor. As the latter, he is also required to check that the company is

complying with the requirements of the Plea Agreement – the criminal settlement. While the three annual auditor reports and the annual environmental reports must be made public, the three annual monitor reports must remain confidential, as agreed with the U.S. Department of Justice.

In June 2020, Thompson must attest whether the Volkswagen Group has fulfilled all of the requirements.

It is clear to the Monitor and those responsible within the company that ethics and compliance incidents cannot be eliminated entirely, even with all of the improvements that have been made. “Transgressions will also be made in the future,” says Thompson. “But an improved Compliance organization will help the company to respond more quickly. This will reduce its risks, and that can’t be bad.”

ETHICS AND COMPLIANCE

Status quo	The Group has developed and implemented a new Code of Conduct, which is applicable throughout the Group. After it became binding, over 1,450 new employees of Volkswagen AG completed training on the revised Code of Conduct between October 2017 and April 2018. The training was also offered online. It includes new uniform content on “Our compliance responsibility” and “Environmental protection”. For the organization of compliance activities, the Group has to take guidance from the Blue Ribbon Report of the Ethics and Compliance Initiative (ECI).
Measure taken	The statistics that capture the number of employees who have taken part in Code of Conduct trainings will be standardized – across all companies and at the locations worldwide.

CULTURE AND VALUES

Status quo	An “integrity question” has been added to the Group’s annual employee survey: respondents can agree or disagree, on a scale from one to five, with the statement, “In our organizational unit, it is possible for everyone to act with integrity.” The responses, which are given anonymously and voluntarily, feed into measures that are developed and implemented as part of the integrity program. For example, a guideline for managers and follow-up workshops for departments and individuals have been developed and integrated into existing processes. The activities relating to integrity, compliance, risk management and culture have been bundled under the umbrella of the joint “Together for Integrity” initiative.
Measure taken	More procedures will be established to monitor and review the obligations. This may affect the compliance, culture and integrity action areas – where it is important, for example, to inform all employees of new processes or rules in reliable, easily comprehensible ways.

WHISTLEBLOWER SYSTEM

Status quo	The Group has set up additional channels for reporting potential misconduct, for example an email address, a toll-free international telephone number and an online tool, which can be accessed both internally and externally. The system was further centralized in 2017 and the team that deals with the queries was expanded. All employees responsible for the administration and management of the whistleblower system at Volkswagen AG and AUDI AG are attorneys and/or compliance professionals. Violations of environmental laws are classified as “serious” violations.
Measure taken	The Group will report on hints regarding violations of U.S. environmental laws and regulations on an annual basis. The processes to this end will be standardized across brands and companies. It must be ensured that all relevant submissions are actually recorded.

PERSONNEL MANAGEMENT	
Status quo	The Group has supplemented the job descriptions of more than 1,000 managers. This considered management positions that are involved in product development in compliance with U.S. environmental protection regulations. Tasks, competencies and responsibilities were defined for this group. For certification employees, a basic training course has been developed, which has to be repeated annually. It provides information especially on compliance with U.S. emissions requirements, including potential fines.
Measure taken	Training on the new Code of Conduct or on compliance with U.S. environmental laws and regulations – and associated statistics – will be more standardized across Group brands and companies. The Group’s complexity will also be reflected by distinguishing between the Volkswagen Group of America and the company in Chattanooga in future reports.

TECHNICAL COMPLIANCE AND PRODUCT SAFETY	
Status quo	The Group has established structures to create an organizational separation between responsibility for product development and responsibility for certification tests and monitoring. A “certification group” across brands and companies has been set up in the Group, which defines guidelines for compliance with U.S. regulations. The Group has revised the development, production and certification process for vehicles and powertrains, as well as the relevant committee structures and responsibilities, several times. A “Golden Rules” handbook describes 13 processes in the associated Internal Control System. An external provider performed tests using portable exhaust measurement systems on eleven light vehicle groups of model year 2017.
Measure taken	The implementation of the “Golden Rules” will be analyzed. This process includes, among other requirements, the disclosure of specific steps and a schedule up to their completion for each unit in the Group on which these rules are binding. For the remainder of the Monitorship, it will also be determined what role Internal Audit plays in implementing the rules.

The journey and the destination

The Group has weathered the first year, but still has a mountain of hard work ahead. The tasks it faces are complex.

The conditions couldn’t be more difficult: the Volkswagen Group, with over 640,000 employees, 12 brands, 120 production locations in 153 markets, is one of a kind. Of course, the breach of trust seen in September 2015 was also one of a kind, but in a negative sense. In order to win back this trust, we will have to master more than just one discipline during our three-year Monitorship. If you wanted to compare the tasks ahead with a sport, it would be a triathlon at the very least. That’s because of three central factors. Firstly, Larry D. Thompson has a dual mandate – as Monitor and auditor. For our team and the Group departments involved, this means two work plans, two approaches to the process, and two reporting lines. Secondly, the mandate is very broad in its focus, both in terms of content and organization. It’s not only individual departments that are affected, but involves many aspects of the entire Group – including a number of its brands, regions, and subsidiaries. And thirdly, we are challenged on a daily basis by the sheer complexity of the Volkswagen Group.

A feat of strength

The Monitorship is the top priority for Volkswagen Group, not least for the Boards of Management, which have made the issue a matter for top management. They have pored over the issue in countless meetings and sessions, and have appointed a significant number of employees to the Group’s

Integrity and Legal Matters division. Additional compliance experts have also been hired to support the relevant departments. This rapid increase in capacities is part of the reason that we were able to enhance the whistleblower system more quickly than expected. The Board of Management established the Group-wide “Together4Integrity” program as an umbrella for all measures surrounding integrity, compliance, and cultural change. Just like the Group strategy, Together4Integrity is geared toward the year 2025, and not just until the end of our Monitorship. Currently, a team of around 50 employees is working on determining the status quo of the change process at numerous Group companies, in addition to deriving suitable measures and supporting their implementation.

First milestones

Above all else, we require resources and time to be able to implement the required



Dr. Thomas Meiers, 47, is responsible for the interface between the experts from the Monitor team and the company.

measures at all levels of the organization and in all countries. Of course, we are all aware of just how much is riding on the success of this cultural change. The targets have been defined, and the packages of measures tied up. Everyone is working hard to implement the necessary changes. But with a tanker the size of Volkswagen, this isn’t going to happen overnight. We’ve reached a few key milestones. We collected a host of materials and organized talks to ensure that they were incorporated into the Initial Review Report published by the Independent Compliance Monitor at the end of March 2018. His recommendations (which are more binding than this word implies) had to be implemented by the Group in just 150 days. The next Monitor report (due in January 2019) is expected to contain further recommendations with even shorter deadlines. Indeed, we’ll then only have 120 days to implement any recommendations.

Thompson’s team also simultaneously compiled a second report, in which our performance in relation to compliance and the environment were assessed. This is available for everyone to view online. Currently, we’re focusing in particular on the seven recommended measures from this second report from the Independent Compliance Auditor. No specific time limit has been set here; however, we’re taking this as seriously as the recommendations and measures from the Monitor report. At the same time, we have to prepare ourselves for the second audit report being published in August 2019. There is still much work to be done and much to accomplish. But we’re primarily concerned with seeing the Monitorship as an opportunity, and ensuring it results in the right consequences for the future sustainability of the Group.

“The Monitor’s recommendations will help us to transform Volkswagen into a better, more respectable company.”

Trial, error, and insight

Experiments on monkeys, commissioned by an industry-financed research association, were met with outrage – also at Volkswagen. After a special internal review absolved the concerned parties of personal legal wrongdoing – clearing the way for their professional rehabilitation – the Group is now seeking answers to a fundamental question: how legitimate and credible can contract research be?

Illustrations — Sébastien Thibault

An institute sponsored by the German automobile industry commissions an experiment on monkeys inhaling diesel exhaust fumes. A few years later, one of the involved companies finds itself embroiled in an affair around exhaust values for diesel vehicles. Then the public learns about the experiment, including the fact that the institute was headed by a company employee until its dissolution six months earlier. The picture can rightfully be described as disastrous.

The investigations carried out as part of the internal audit by the Volkswagen Group found no violation of any law or circumvention of any review of research ethics – either by the responsible members of the research association’s committees, by individuals in the member companies, or by scientists at the commissioned research institute. Yet the Group maintains today that these experiments should never have taken place. How can possibly unrecognized ethi-

cal and reputational risks be controlled if none of the established systems raise the alarm?

To answer this question, the functions responsible for Integrity and Legal Affairs of the Management Board initiated an independent, Group-wide investigation of all joint research and development projects by the auditing firm, Deloitte. Since April 2018, a newly founded team has been coordinating inquiries into the cooperations over the last five years. “We look at which projects could pose the highest potential risks,” explains Project Head Dr. Hans Georg Raber. These could be of a legal or ethical nature, or risks that primarily impact company reputation.

The team is examining several thousand cooperations. At the beginning of the investigation, there were more than 1,700 projects with over 300 universities and research institutes in 29 countries worldwide. Along with joint research projects, these include endowed

Under lock and key:
companies seldom
disclose information on the
research they commission –
they fear losing their
competitive advantage.



professorships and postgraduate positions. In total, the Volkswagen Group invested over 13 billion euros in research and development in 2017. The annual report does not state how much of this was contracted out.

The Group isn't alone here. According to Germany's Federal Statistical Office, 1.46 billion euros flowed from companies to German universities in 2016 – nearly a fifth of all third-party university funding. Only rarely do the research institutes disclose what projects the money goes into. In the same year, the federal and state governments provided universities with basic funding of almost 30 billion euros. Dr. Michael Mesterharm of Volkswagen's corporate university AutoUni, who is responsible for the Group's cooperation with universities, doesn't reject more transparency in principle. He says he would favor databases of third-party-funded research in which "the industry was named, but

"A company can't always stew in its own juice."

no details." Mesterharm sees nondisclosure agreements as necessary, above all due to industrial property rights for patents. Were detailed information to be made public during the course of a research project, he explains, a competing company might exploit this and file for a corresponding patent itself, or later raise objections to a patent application by Volkswagen. "That would render the invested money worthless," he says.

Transparency and company secret

Maintaining silence about ongoing projects is the recommendation of, among others, the industry-financed association, Stifterverband. When making information public, universities should "consult closely with companies in order to protect their corporate and trade secrets," the Stifterverband advised in 2015. In a 2011 study, the Bundestag Research Services described a "comprehensive disclosure requirement" as "problematic", as it would require companies to "reveal advantages in scientific know-how, as well as corporate and trade secrets."

Within the academic sphere, researchers at universities and institutes are themselves grappling with questions about the transparency of their third-party-funded research. "What you keep secret leads to suspicion – and that's toxic for people's trust in institutions," warns Dr. Uwe Schneidewind, President of the Wuppertal Institut für Klima, Umwelt, Energie gGmbH and a leading thinker on "sustainable science". "What happens in public and publicly financed institutions must be accessible to the public," he argues. Surveys support Schneidewind's viewpoint: half of those questioned in the representative "science barometer 2017" trust scientific and research institutions. Of the 21 percent who don't, however, over three-quarters agree with the assertion that the scientific community is too dependent on financial sponsors. "I understand the pursuit of third-party funding, especially on the part of research



Key to innovation: cooperation with universities and research institutions helps companies advance – but as long as a project is ongoing, both sides keep information about it under wraps for good reason.

institutions closely associated with industry, because their existence depends on it," says Schneidewind. "But you can't tell me that joint projects and research results need to be protected to the extent that they are today."

What should companies do when full disclosure isn't in their own interest? Rely exclusively on in-house research? Michael Mesterharm, who earned his doctorate under Schneidewind, says that "a company can't always stew in its own juice when it wants to put innovative products or services on the market. It needs outside stimuli – at least to be sure it's on the right track." And this in turn raises the question of whether greater transparency might ultimately not only serve the credibility of the scientific sector, but also the reputation of the company.

At the core of the debate over the legitimacy of contract research lies something else: the motive. "When the purpose of a study is to legitimize one's own products, then I have to seriously question the scientific and societal relevance of the question that's driving it," says

Uwe Schneidewind. His suggestion: a research association whose membership includes representatives from industry, environmental and consumer protection organizations, and unions, along with company employees, funded partly by industry and partly by the Ministry of Research. "In a body like that, it wouldn't occur to anybody to use tests on monkeys to prove that new diesel motors are safe," Schneidewind maintains. Such an association would enable more fundamental discussions before experiments began. How long will an older technology still be needed? How quickly can it be replaced by a new one? This would presumably give rise to other research focuses.

The objective: gaining insight

Yet some scientists perceive such proposals as patronizing. The German Research Foundation (DFG) warns against orienting research exclusively around "aspects of societal relevance". And Günter Stock, former president of the Berlin-Brandenburg Academy of Sciences and Humanities, insisted in a 2014

debate with Schneidewind that innovation is "a sensitive process", and scientific breakthroughs can't be "delivered on anybody's demand, ordered up, or organized."

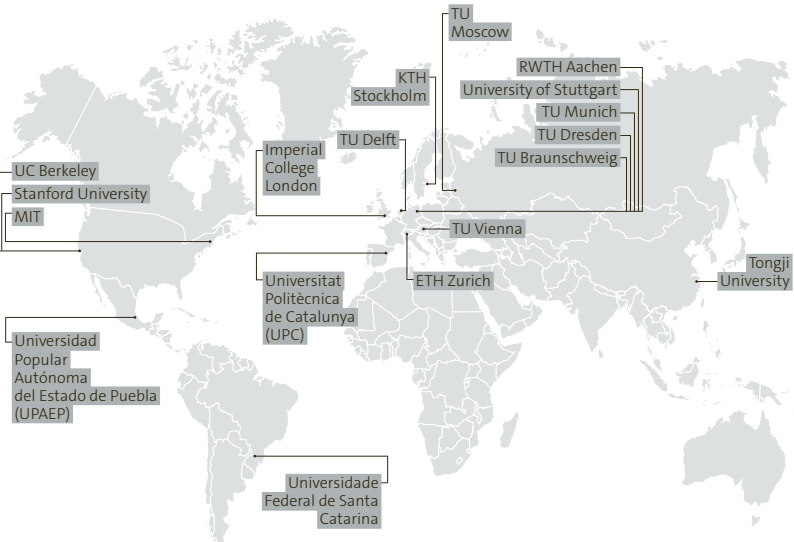
Michael Mesterharm also tends to see internal company guidelines for research cooperation as the answer to the question of legitimacy. "The key questions," he says, "should be: what expertise are we looking for? What are our goals? What do we actually want to accomplish with this study?" It also depends on who, in particular, commissions a study. "That should be the specific competent department."

The introduction of any rigid rules for research cooperation is quite impossible, judging from what Hans Georg Raber and his team have examined so far. The range of the Group's activities is too diverse to allow this, he says. However, one principle should apply to all decisions about external scientific projects: any research contract must serve the acquisition of disciplinary knowledge – and not be pursued with the intent of bolstering positions already held.

RESEARCH COOPERATIONS WORLDWIDE

The brands and subsidiaries of the Volkswagen Group collaborate with research institutions worldwide, especially with universities. An internal database creates transparency regarding existing cooperations, connecting the responsible people and collecting information on research focusses.

In September 2017, more than 1,700 national and international cooperations with universities, universities of applied sciences and research institutes were registered.



Selected cooperations, as of September 13, 2017

In the third year

Maneuvering in two time periods: while ongoing lawsuits work through the past, structural and investment decisions turn the focus on the Group's future.

Text — Daniel Kastner

Seven years in prison

In the USA, executive Oliver Schmidt is sentenced in Michigan's Eastern District Court to seven years in prison and fined US\$400,000 after pleading guilty to criminal offenses including a violation against the Clean Air Act.

DEC
6



The EUGT and monkeys

Media report that, in 2013, the legally independent research association EUGT commissioned a lab in New Mexico to carry out a series of experiments in which monkeys were exposed to diesel exhaust fumes. Thomas Steg, general representative of the Group, assumes responsibility and takes a leave of absence. After an internal special investigation exonerates him from the accusation of personal legal misconduct, Steg returns to the Group.

2017

JAN
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2018

FEB
27



Diesel bans

The Federal Administrative Court in Leipzig rules that cities have the basic right to issue bans on diesel vehicles if this enables them to meet their air quality control targets. On May 30, Hamburg becomes the first German city to introduce such a ban, closing two street sections to certain diesel vehicles.

APR
12

The Supervisory Board of Volkswagen AG designates Dr. Herbert Diess, Chairman of the VW brand, to become Chairman of the Group Board of Management. Group Board Member for Human Resources Karlheinz Blessing is succeeded by General Secretary of the Group Works Council Gunnar Kilian. Group Board Member for Procurement Javier Garcia Sanz leaves the company. Oliver Blume, Chairman of the Executive Board of Porsche, is appointed to the Group Board of Management.

MAY
9

MAY
3

Winterkorn indicted in the USA

On the evening of the Annual General Meeting in Berlin, it is announced that the US District Attorney in Detroit is indicting former CEO Dr. Martin Winterkorn on charges including violations of U.S. environmental laws.

The German government drafts legislation for the introduction of model class action lawsuits. Initially such suits are to be argued in court by consumer organizations. However, the court doesn't decide on the amount of the claims of individual plaintiffs involved. Rather, individual claims must be filed in separate proceedings to follow.

Stadler taken into custody

The Office of the District Attorney Munich II takes Audi CEO Rupert Stadler into custody one week after conducting a search of his home. On October 2, Stadler leaves the Volkswagen AG and AUDI AG management boards. On October 30, he is released from custody.



JUNE
18

JUNE
13



Volkswagen accepts a fine imposed by the Braunschweig public prosecutor of €1 billion.

The administrative order is linked to negligent breaches of monitoring obligations in the VW Powertrain Development department and relates to the period from mid-2007 to 2015 and a total of 10.7 million vehicles with diesel engines of types EA 189 worldwide and EA 288 (Generation 3) in the USA and Canada. The regulatory offence proceeding of the Braunschweig public prosecutor against Volkswagen AG has thereby been concluded. In October 2018, the regulatory offence proceeding of the Munich II public prosecutor against AUDI AG has been concluded by an administrative order imposing a fine of €800 million.

OCT
25

About **80** percent

of the affected diesel cars with type EA 189 engines across the EU have been updated. In Germany, the service action has been completed on approximately 98 percent of these vehicles. In a "final assessment of the dialog" with Volkswagen, the EU-wide network of national consumer authorities also welcomes the result of the recalls.

“Have you noticed?”

In the first year, we asked about expectations concerning the realignment of the Group following the diesel crisis. In the second year, we sought an assessment of the measures announced. After three years, it is time to ask how outsiders perceive the transformation – and where they think we need to continue to improve.

Opposite our stakeholders’ responses, we present the company’s perspective.

Edited by — Daniel Kastner

POLICY

“Where do you notice the Volkswagen Group assuming social responsibility? And what do you think is still missing in the exchange between policymakers and the company?”

“The Diesel crisis has shaken confidence in VW and car manufacturers in general. It has had a very negative effect in the minds of policymakers and consumers. Even though it has not affected the bottom line of the company, VW has been willing to acknowledge its shortcomings and publicly engage in dialog about ways to avert something like that taking place again.

But it is important to go beyond dialog and into action. Streamline ethical questions in decisionmaking and make them as central as generating profit. The company also needs to continue working with authorities, consumers and civil society in an effort to ensure that all

those affected are properly compensated and the right mechanisms, not least in terms of accountability, are in place to ensure that such actions are not repeated. Above all, VW must demonstrate that good corporate citizenship is at the heart of the company’s ethos, not least because employers, small, medium or large, are an integral part of society and their contribution goes beyond the provision of goods and services.”



Eva Maydell, 32, is a Member of the European Parliament and President of European Movement International. She is co-founder of Education Bulgaria 2030 and initiator of the #Regulation4Innovation series.

The Volkswagen Group is engaged in a dialog with parliaments, government administrations, and public agencies throughout the world. The goal is to make the company fit for the future and find sustainable mobility solutions for customers and cities. The latter, for instance, are to be supported with 160 million euros, which the Group is paying into the German fund “Sustainable mobility for the city”. Electric shuttle and logistics concepts are to be implemented within mobility partnerships with several cities. And more than 210,000 old diesel vehicles have already been replaced by new models under the environmental incentive program. The Group is also advancing the technological transformation toward electromobility: in addition to expanding production and the required qualifying training for employees, the company is a driving force for the necessary framework for tax, transportation, and industrial policy. Beyond that, the company and its workforce regularly take a stand against populist and nationalistic currents in society.

MEDIA

“Where do you notice the Volkswagen Group responding more cooperatively to critical questions and dealing more confidently with negative headlines and news about crises? And where should it become yet more transparent?”

“The results are mixed. One example of progress is more direct communication from top leaders. Chief Executive Officer Herbert Diess and Chief Financial Officer Frank Witter both took questions from journalists, including critical ones, after reporting first-half results in August. This format didn’t exist before.

Witter has also improved communication with analysts and investors, engaging more frequently during roadshows. Less transparent are the still-convoluted decisionmaking processes that have led to abrupt executive changes. VW’s majority owners, the Porsche and Piëch family, and Qatar, the third largest shareholder, have remained largely mum since the diesel crisis. No. 2 owner Lower Saxony, by contrast, been outspoken about the need for accountability – despite criticism from analysts of the state’s coziness with labor unions on VW’s supervisory board. Despite pledging change, the group also continues to allow individuals to switch from a labor position to the management board. These roles are clearly separate at other industrial companies, including ones that also have strong co-determination with the labor unions.”



Christoph Rauwald, 43, is a senior reporter for the automotive industry at the financial information provider Bloomberg L.P. He previously worked for The Wall Street Journal/Dow Jones and the Handelsblatt Media Group.

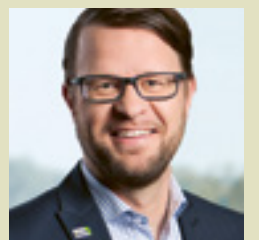
The Volkswagen Group has created new channels that allow it to communicate better, faster, and more directly with the public and the media: the press team has special contacts for Supervisory Board-related and legal issues. Members of the Management Board increasingly explain decisions in public, for instance in interviews or on talk shows. The Group now communicates via YouTube and Twitter, the Volkswagen Group Newsroom is available as an app, a public intranet shows what goes on inside the corporation, and journalists, too, are offered insights into current research projects during the annual Future Mobility Days.

NON-GOVERNMENTAL ORGANIZATIONS

“Where do you notice the Volkswagen Group taking its responsibility for the environment seriously? And what additional measures should it take to protect the climate and the environment?”

Electromobility is the key to decarbonization in the transportation sector – as long as the use of renewable energies for electricity generation is increased. Today over one third of the electricity the Group consumes in production comes from green sources. Moreover, from 2022 on, the switch from coal to gas at the power plant in Wolfsburg will save some 1.5 million tons of CO₂ a year. The “Roadmap E” provides for 80 new electrified models by 2025 and investments of approximately 20 billion euros by 2030. CO₂ emissions throughout the life cycle of all vehicles are shown in the Decarbonization Index. Targets for the different phases are being planned. The Group is also aware that its responsibility for the environment starts in the supply chain, and it has long lived up to this responsibility by imposing sustainability requirements on suppliers and sub-suppliers. Today social and ecological standards in resource mining are at the center of risk analyses and the development of a sustainable procurement strategy.

“The diesel crisis revealed problems in the internal decisionmaking structures of Volkswagen AG. These are also evident when we look at the area of climate and environmental protection. Sustainability is now receiving greater emphasis in VW’s external communication, but when it comes to implementation, there is need for improvement. The electrification of passenger cars now on the rise globally is leading to a shift in ecological and social aspects of mobility, as well as in its economic premises. The Group should prepare for this, in its own interest. Saving raw materials and energy is necessary to ensure our future. The heavier cars are, and the larger their electric range, the more raw materials they consume. Due to their excessive energy demand, electricity-based fuels aren’t an alternative. Unfortunately, VW’s product announcements in the segment of extra-large and heavy SUVs cause me to doubt whether the Group is taking its responsibility for the environment seriously.”



Jens Hilgenberg, 42, has worked in the transport unit of BUND e.V. since 2017, since May 2018 in an executive position. He holds a graduate degree in political science and has been a member of the council of the “Agora Verkehrswende” think tank since 2016.

JOB PLATFORMS

“Where do you notice that the Volkswagen Group has become a more attractive employer? And will changes in recruiting, as well as new vocational fields and career paths, ensure this attractiveness over the long term?”

“The LinkedIn data tell us that employees remain with Volkswagen an average of 8.6 years. By contrast, in the IT sector the average is a mere three years. As far as job duties, behavior of colleagues, and equal opportunities are concerned, the company also gets good to excellent marks from its more than 90,000 salaried employees on LinkedIn. What



Gudrun Herrmann, 42, is Communications Lead for the professional network LinkedIn in Germany, Austria, and Switzerland.

the company needs to do now to remain an attractive employer is bring about sustainable change. Millennials, especially, are no longer looking primarily for lifelong job security. What they value is working for a company that offers them a genuine vision. Herein lies the opportunity for the Group: the employees are behind the company. This makes it easier to effect true change and ensure that the corporation is honest and fit for the future than if you have to deal not only with dissatisfied customers but also grumbling colleagues.”

”

The Volkswagen Group is evolving into a mobility provider. This entails the creation of new job profiles, for instance in IT. “Beat Ordinary Thinking” is the name of the new recruiting campaign for these positions. Then there are innovative qualifying programs, such as “Faculty 73”, which focuses on software development, or “xStarters” for digital education. In major cities around the world, Group-owned labs offer attractive working conditions; in other places as well, work is increasingly organized on a digital and mobile basis today. New career paths and forms of collaboration promote diversity. “We believe in diversity” is one of the seven Volkswagen Group Essentials.

FLEET CUSTOMERS

“Where do you notice the Volkswagen Group advancing electromobility? And what kinds of offerings, information, and support do you wish for as a customer?”

The Volkswagen Group wants to make electromobility attractive and affordable over the long term for its fleet customers as well. It advocates public policies to further this effort, for instance in the form of incentives or a reduced company car tax for e-cars. Electromobility is a priority: for the first time in the history of the brand, the company has a director whose sole responsibility is the E-Mobility division. From 2019, the Zwickau plant will be converted into a site strictly for electromobility, and at the Center of Excellence in Salzgitter, Volkswagen is establishing the know-how for battery cell technology. The joint venture IONITY, founded by Volkswagen and other automobile manufacturers, aims to build 400 quick-charging stations along European freeways by 2020.

”

“Technologically speaking, it is no doubt a remarkable feat to take an electric car to the top of Pikes Peak in under eight minutes. But in terms of actual climate protection, I would be more impressed if we had affordable electric small cars and utility vehicles that could be used to make customer calls eight hours a day. Plus, switching to alternative drive systems takes a lot more than just a greater variety of engine options. To compete, you have to offer an entire ecosystem of charging infrastructure, in addition to billing, user training, fleet optimization, and support with regard to available public subsidies. Beyond plenty of announcements of cars with fantastic performance, you don’t see much of this in practice. I think the reality of electromobility at VW is still far from what the glossy brochures and trade fair booths would have you believe. My wish: promise less and deliver more.”



Alexander Liebau, 45, has been head of the sustainability department at the Gegenbauer Group of Companies since 2015.

Photos: PR

Policy for the next generation

CO₂ emissions in the European transport sector must come down. A research project is analyzing technological hopes, political incentives, and rebound effects.

Text — Daniela Blaschke

Car manufacturers are becoming mobility providers. They are electrifying their fleets, and developing intelligent assistance systems and self-driving shuttles designed to relieve pressure on the roads. These strategies need to deliver soon if road transport, which causes nearly three quarters of transport-related CO₂ emissions, is to play its part in protecting the climate. So far, absolute emissions in Europe have

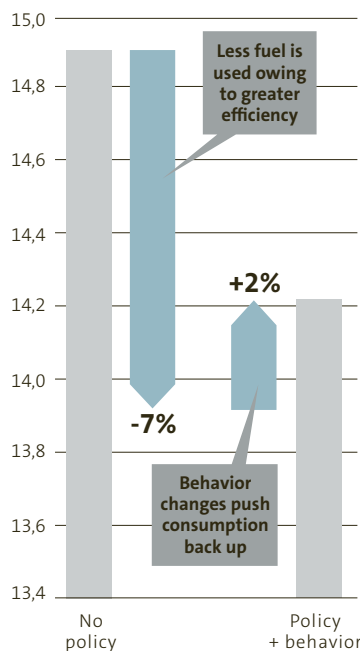
not fallen below the 1990 level. They need to be around 40 percent below it by 2030. Current government policy is also focusing on more e-mobility.

But what happens if these electric, autonomous vehicle concepts conquer the streets – and anyone can board these shuttles at any time? How should policymakers create incentives for zero-(local-)emissions mobility, while also keeping surging demand for the new products and services from exceeding the original target limit? How can falling prices for gasoline and diesel be prevented from attracting new customers and worsening the CO₂ balance in the sector? On the initiative of the Volkswagen Group Sustainability Council, a research team led by Prof. Dr. Ottmar Edenhofer is investigating these questions. The scientists from the Mercator Research Institute on Global Commons and Climate Change, the Potsdam Institute for Climate Impact Research, and the Paul Scherrer Institute are using detailed data on the mobility habits of German households to gain a better understanding of the effects of different policies on consumer behavior.

The result will be “next-generation policies” – an evidence-based, economic framework for electric and autonomous vehicles that achieves its climate protection aims. The Volkswagen Group is hoping the project will deliver valuable insights for its own decarbonization strategy.

TECHNOLOGY ON ITS OWN IS NOT ENOUGH

Policy must also take account of rebound effects.



y-axis: Energy consumption (10¹⁵ British thermal units)
Diagram following Gillingham et al. 2013

Illustration: Uli Knörzer

THREE QUESTIONS FOR



Dr. Thomas Steg, 58, the chief lobbyist for brands and regions at the Group level.

„These are social matters.“

Shift: Will you be lobbying for “next-generation” policies?

Dr. Thomas Steg: As a company, we have specific interests in terms of e-mobility. But we also want to talk about charging infrastructure, battery cell production, and energy policy.

Of course, this is also lobbying, but a specific type.

In what way?

I see a direct connection here between the interests of the general public and what is important and useful for the company. These are social matters, where decisions are being taken about how mobility will be organized in the future and how we will work and live.

Will we hear the same views from the associations? How certain are you of having the support of your industry?

With the associations, it’s always about finding a compromise. Their position will never be dictated by the most progressive force. But their strength lies in the fact that policymakers can come to an agreement with industry representatives without exposing themselves to accusations of lobbying for individual companies – however progressive or desirable those companies’ positions may be.

Paired up for a week

Peter Maiwald and Caitlin Ranfft both work in the After Sales & Dealer Network for the Volkswagen Passenger Cars brand. Until recently they did not know one another. That all changed when the young woman shadowed the top manager for five days as part of the “A week in the life of” project.

Text — Anette Frisch **Photos** — Ériver Hijano

How is Volkswagen promoting a corporate culture in which people know how to behave with integrity? A culture in which they have the courage to speak out? And one in which communication and collaboration are not dictated by hierarchical thinking?

These are key questions for those in charge at the Group – but not only them. Everyone wants to understand how the diesel crisis could happen and to be certain that rules will not be broken in the future. When it comes to the best way to bring about a successful culture change, opinions differ. Some say measures will have a limited effect because the only way the company can change is if the people change (and nothing is harder than that). Others believe measures are important because they prompt people to put theory into practice, which means they provide constant support for culture change – like dripping water that eventually bores into stone.

Regardless of which of these two views one identifies with the most, culture change requires will power and the confidence not to give up in the face of setbacks. After all, setbacks are signs that things are moving. Direct experience is also essential for culture change: employees experience it in their everyday work and help shape it.

This is the idea behind the Role Model Program. The Group's training academy has developed ways for people in the Group to meet in person away from theory and hierarchy, to gain greater understanding for one another, and to support the journey to a more open feedback culture – for instance, through a week spent working together.

Caitlin Ranfft and Peter Maiwald were one of the first pairs from the Volkswagen Passenger Cars brand to sign up for the program. Here, they reveal what expectations they had before the week started and what they experienced.

On behalf of the Management Board, the Volkswagen Group Academy has developed a Role Model Program with ten measures designed to help people share ideas and experiences on an equal footing, to break down hierarchies, and to build trust in the serious nature of the culture change. Members of the Management Board and top managers for all the brands have pledged to run at least two measures in 2018. Suggestions are available on an in-house communications platform. Implementation of the measures will be reported to the monitor; it is expected that at least 2,500 will have taken place by the end of the year. Plans are for the final report on the Role Model Program to appear on December 31, 2018.



Talking on an equal footing: Caitlin Ranfft and Peter Maiwald during a coffee break in the courtyard on Daimlerstraße in Wolfsburg.

RECOUNTS BEFORE

From South Carolina to Wolfsburg: the American started her job at VW three years ago in the middle of the diesel crisis.

Ms. Ranfft

Copy editor, logbook management

“Of course, I have respect for the week ahead”

“I hope to gain interesting insights and learn about a top manager’s area of responsibility. That’s bound to be fascinating. Mr. Maiwald is very successful in the company and people respect him. He is also demanding. I am interested in how he works, and especially how he deals with his colleagues. I am also looking forward to getting to know the different departments and sections at Volkswagen better during my time with Mr. Maiwald. For me, good leadership means putting together, leading, and guiding a heterogeneous group of people with different skills. A manager needs to be able to listen, to take on board different views and information from their team, and analyze the insights, take decisions, and find solutions. In my department, questions and problems are discussed construc-



Caitlin Ranfft, 29, works in logbook management in the After Sales & Dealer Network section, which is headed by Peter Maiwald. She writes user manuals for the U.S. market, which end up in the glove compartments. An American by birth, she has been with Volkswagen since 2015. She has a master’s degree in management and studied German and English in the USA. Before she joined VW, she worked in a medium-sized company in Switzerland.

tively. I think that’s a good thing because I can contribute my ideas. And I have the feeling that they are taken on board. Of course, I have respect for the tight daily schedule of a top manager. But my curiosity is greater. I have already discussed the schedule with Mr. Maiwald’s secretary, and I’m looking forward to the week. I hope that I can really immerse myself in it.”

Mr. Maiwald

Head of After Sales & Dealer Network, Volkswagen Passenger Cars brand

“I don’t have to demonstrate everything”

“I manage a department with 900 people. I don’t know Ms. Ranfft yet, but I’m really looking forward to meeting her. It’s important to me that she sees how I am as a person. We top managers are not streamlined executives.

We’ll arrange the week together. I don’t have to demonstrate everything. For me, it’s a unique opportunity to see whether our messages actually mean anything to a young person like Ms. Ranfft. She will bring a different perspective with her. And I’ll be delighted if she comes with me to meetings and events, and I get to hear how she feels about them.

I am doing several activities from the Role Model Program because I find the concept of working across hierarchies extremely important. As a manager, I believe my greatest task is to break down employees’ fear of assuming responsibility and contributing their ideas and actions. If we don’t succeed in this, there will be no culture change.

However, I am also asking myself whether we are doing all this purely to fulfill the terms of the monitorship. I expect us to take culture change seriously. I am someone who feels a very close connection to the company but who, in the light of the diesel crisis, has had to step back and take a critical view of events. I say what I think, obviously in an appropriate form. That may not be to everyone’s liking, but that’s the way things are.”

Over time: Peter Maiwald, who comes from the Rhineland area of Germany, has worked for Volkswagen for over 30 years. He has seen lots of changes in that time.

Peter Maiwald, 58, has held a number of leadership positions in the Volkswagen Group since 1985. In his current function he is responsible for the international dealer structure and development of the Volkswagen Passenger Cars brand, as well as system and process management. Workshop documentation, vehicle diagnosis, and repair and customer advice also come under his area of responsibility. Through the Volkswagen Academy Sales & Services, Peter Maiwald, who holds a degree in economics, is also responsible for the training of all employees working for the international Volkswagen partner organizations.



RECOUNTS AFTER

“No one raised their voice”

Ms. Ranfft

“It was a fantastic week. My expectations were completely fulfilled. Mr. Maiwald and his team were very open, and I felt welcome. I was very well integrated. Mr. Maiwald made a lot of time for me. We had intensive briefings before his meetings and debriefings afterward, and discussed any unanswered questions. The



New routine: every morning, Caitlin Ranfft and Irina Schöner, Peter Maiwald’s secretary, discussed the schedule for the day.



New office: for her week with Peter Maiwald’s team, Caitlin Ranfft got a new desk close to them.

only meetings I wasn’t allowed to attend were staff appraisals. I used to think that top managers acted very tough in meetings. But it wasn’t like that. They spoke calmly and no one raised their voice. I am a rather reserved person. The week showed me personally that assertiveness and a friendly atmosphere are not mutually exclusive. A meeting on the topic of regionalization was particularly interesting for me. For instance, the question about how work can be divided up efficiently between Wolfsburg and other locations in the USA, China, or South America. That’s something that’s also being discussed in my department with colleagues in Puebla and Chattanooga. I didn’t feel overburdened during the week. Perhaps Mr. Maiwald feared I would be because my job is very different from his. But that’s exactly how it should be! I think we are often our own worst critics.”



Drawback: for Peter Maiwald, a week is not long enough to get to know one another – familiarity cannot be created to order, he says.

Trust and distance: team members address one another using the more formal “Sie” form; Caitlin Ranfft likes that because it preserves boundaries.



„I went about things more sensitively“

Mr. Maiwald

“That was a very educational experience for me. I’m not used to thinking about having someone with me all day long, because normally I tend to organize my own day, or my secretary does. Taking someone with me, clarifying things, being available to explain things – that was really new to me. I think I overwhelmed Ms. Ranfft at the beginning. The week always starts with a three-hour meeting, in which I talk with my direct reports about a wide range of issues. That can be confusing. After a feedback session on the first day, I agreed with Ms. Ranfft that I would introduce the meeting attendees to her in advance and explain what the meeting would be about. That made it easier for her to get into it, and I think we got better at it each day. In general, what I learned was that when someone is there who is not usually there, you do things more consciously. I went about things more sensitively. There is a ‘Peter Maiwald’ style: enjoying work, motivating employees, being self-assured, facing forward fearlessly and with lots of energy. I did ask myself whether my style might not be too much for Ms. Ranfft. I learned that we managers are sometimes too far removed from the rest of the workforce. Essentially, we are always in our groups, which are strongly driven by hierarchy. How can we make the lower levels more visible, and how can we become more visible to them? Communication that is less hierarchy-based, inclusive project groups, and collaboration are absolutely vital. We are still a long way away from this.”



Prof. Dr. h. c. Jutta Allmendinger, 62, is president of the Berlin Social Science Center (WZB). A professor of educational sociology, she has received numerous distinctions, including the Order of Merit of the Federal Republic of Germany. In addition to her academic activities, she has been a co-publisher of the weekly newspaper Die Zeit since 2017.

“Women still face no-win situations”

In August 2018, shortly before leaving for Los Angeles to begin her four-month Thomas Mann Fellowship, Prof. Dr. Jutta Allmendinger spoke in Berlin about the cultural change in the Volkswagen Group. For Shift, the sociologist, who seldomly shies away from a debate, elaborated on her thoughts about crisis, coming to terms with it, and diversity.

Interview — Anette Frisch

Shift: In Berlin, you said it was your impression that the Group took too little action with regard to personnel after the diesel crisis. Why is it so important to do so in your view?

Prof. Dr. Jutta Allmendinger: I pointed out that assuming responsibility is generally a central issue. This is true for all personnel, but especially for executives. Because of their high level of responsibility, they're very well paid. When something goes wrong, they have to be there for their employees. They have to take responsibility and act accordingly. The employees expect that of them, and I think it's legitimate. Independent from the question whether they've personally done anything wrong or not.

Would the diesel crisis have happened if there had been a woman at the helm of the Volkswagen Group?

I assume so. In principle, women don't make any fewer mistakes than men. I don't think they lead differently, ei-

working 24/7, that allow shared managerial positions and more time outside of work. In this respect, the women's issue is always in part a question of the explicit and implicit norms that are anchored in our work world. For this systemic issue to be solved, however, there have to be women in positions of leadership in the first place.

You mean hired and then promoted. How much is that influenced by unconscious prejudices and stereotypical ideas?

All of the studies I'm familiar with show that biases and stereotypes are very powerful, precisely because we so rarely admit them to ourselves. I'll cite a study of the WZB that attests to that: fictitious mothers and fathers responded to a real job advertisement with identical application documents. It turned out that for fathers it was insignificant whether they had taken two or ten months of parental leave. In contrast, women who had taken

ering that in our work world, taking ten months of parental leave often means substantial career disadvantages. It's a no-win situation for women, no matter what they choose.

Are the political measures taken thus far sufficient to bring more diversity to the highest decision-making bodies?

Political measures have been optimistic. Take, for example, the introduction of the voluntary commitment of DAX companies to increase the proportion of women on their boards – obligatory targets were only set for supervisory boards. Unfortunately, this was too optimistic. Many companies gave zero as their voluntary target – that is, they didn't look for women at all. The government must urgently follow up with adjustments, otherwise nothing will change.

You've done research on the labor market for over 25 years – when it comes to diversity, what problem still hasn't been solved?

Many companies seem to assume that diversity can succeed overnight and achieve better overall results. That's nonsense. We're all full of prejudices against others who are older or younger than we are, who come from other cultures, or are of a different gender. So diversity has to be learned right from the beginning, in our preschools and in our schools. And it has to be lived, in our circles of friends, in our residential environments. Only day-to-day experience with people helps to break down prejudice and create positive energy. Diversity doesn't work if it's imposed on you.

Could artificial intelligence possibly ensure unbiased hiring and fair promotion in the future?

I seriously doubt that AI will help. At the moment, the algorithms would just select people with characteristics that led to success in the past. That isn't enough. Because a lot of people never got the chance to develop fully – even though they had what it takes.

“All of the studies I'm familiar with show that biases and stereotypes are very powerful, precisely because we so rarely admit them to ourselves.”

ther. But the culture of a company changes when it's headed by women as well as men. Different positions on issues, different attitudes come together. The broader spectrum of ideas simply makes companies better.

The credo of diversity management is: “Don't fix the women, fix the system.” Is diversity a question of the system?

I think the credo is right. The idea can't be to effectively make women into men and force them into male résumés. The aim really has to be to introduce new employment modes that don't demand

two months' leave were invited for an interview significantly less frequently than women who had taken ten months.

Why?

The mothers who had taken only a short time off were intuitively perceived as being dislikable. It was assumed that they were too focused on their career and were only marginally taking care of their children. It's a depressing result. It shows how quick we are to attribute certain characteristics to women without even knowing them. And it's even more depressing consid-

Sharing is learning

The Open Source Lab on Sustainable Mobility – a project initiated by the Volkswagen Group Sustainability Council – will use open source approaches to shed new light on mobility challenges.

Text ____ Valdis Wish
Photos ____ Ériver Hijano

A bright, green future – it seems right around the corner when you visit the EUREF campus in Berlin's Schöneberg district. Look in almost any direction, and you can see state-of-the-art wind turbines, solar panels, algae tubes, or electric vehicle charging stations. There's even an autonomous shuttle that passes silently by every few minutes.

It's early July on campus, and a team of design researchers is busy setting up the Open Source Lab for Sustainable Mobility. Launched by the Volkswagen Group Sustainability Council and run by the German Research Center for Artificial Intelligence (DFKI), the lab will spend much of the next year here focusing on three key topics related to sustainable mobility.

Each topic will be an intense exploration of a concrete mobility challenge in a specific place. The first will look at the various use cases and potential of open source to promote sustainable mobility.



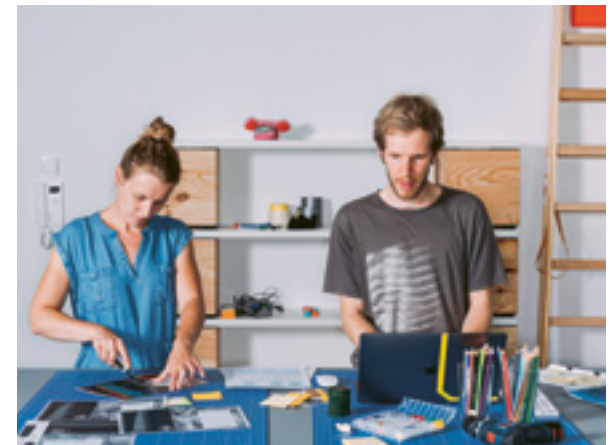
ty. Once the research phase begins, the lab will seek out the perspectives of different stakeholders – everyone from experts and policymakers to everyday consumers. To do this, the lab will observe behavior, conduct interviews and experiments, and host interactive events like

workshops and round-table discussions. Stakeholder participation is the centerpiece of the project. “The lab isn’t about technical development of products or services, but rather about discourse,” says Susanne Ritzmann, one of the lab’s design researchers.

The lab is mostly interested in social change. For each key topic, it will find successful pilot projects within Germany and beyond, and ask what needs to happen for them to scale up and work in other places. This means examining people's everyday routines, habits, and attitudes, as well as the political context.

The Volkswagen Group should be able to learn from the lab's observations and collaborations. So can anyone else interested in sustainable mobility. “Open source” is a term software programmers use to describe code that can be shared, modified, and reused. In recent years, it has carried a broader meaning. “It stands for transparency, communication with others, and handing over your results so they can evolve into something bigger,” says Ritzmann. This matches one of the Volkswagen Group Sustainability Council's priorities: more openness and listening to outside impulses. Members of the Council will also support the lab's work throughout the year, depending on the topic and expertise needed.

How exactly does one share social innovation? The Open Source Lab team will regularly communicate and discuss its findings and progress, for example, through blog posts, podcasts, and on-site events. The interdisciplinary scientific work within each key topic will also be published. The exact format that these analyses and insights will take, however, is intentionally left open. As they finish each topic, the design researchers will explore the best formats for getting their findings out of the lab and into the world. After all, “open source” isn't just about how you get innovative results; it's also about how to share them.



The Open Source Lab is based on an interdisciplinary working culture.

“The lab isn’t about technical development of products or services, but rather about discourse.”



The lab is a place for discourse and collaboration.

Electrifying

Volkswagen will democratize electromobility – with significantly greater ranges and at low prices. At the end of 2019, the production of the ID. starts in Zwickau – with a neutral CO₂ balance. What solutions are there for charging?

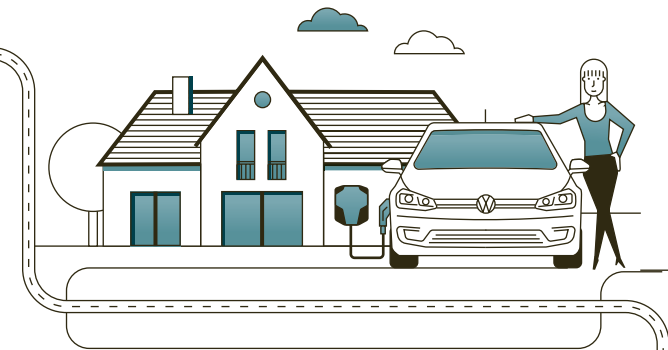
Text — Martin Höfelmann Illustration — Gutentag Hamburg

Germans seem to have found a place in their heart for electric cars. Although only around 100,000 electric vehicles were registered here by the end of last year – a market share of two percent – the growth rate is good: nearly 120 percent for electric-only passenger cars in 2017 compared with the previous year.

The driving forces behind this growth are increasingly stringent CO₂ limits and discussions about air quality in towns and cities. Environmental incentives and an increasing number of electric models in all vehicle classes are also having an impact. But without charging infrastructure, they won't get very far.

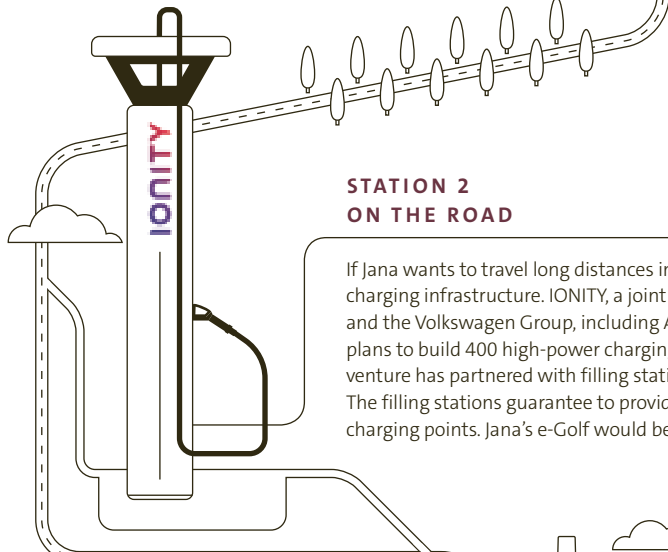
Home charging is by far the most frequent method used. People living in a single-family house with a wallbox can consider themselves lucky. Those living in multi-family houses currently need the agreement of all other owners before they can install a wall charger. E-car owners get 15 percent of their charging power from public charging points of which there are less than 5,000. Of those, only 530 are rapid charging points. More will need to be built – at workplaces, in parking lots, and on highways. Public funds were made available for this starting in 2017.

Meanwhile, car manufacturers have set up a joint venture to build ultra-fast charging points across Europe. "Our customers need green, low-cost electricity for long journeys," says Marcus Groll, COO at IONITY. "We therefore believe there is a need for simplified collaboration between electricity network operators, authorizing bodies, and local partners."



STATION 1 AT HOME

Jana has the ideal setup for her e-Golf: a wallbox in her garage that charges it overnight. She could also use a 2.5 kW household socket, but that would take 17 hours. The 11 kW wall charger takes around five and a half hours to charge her car. Wallboxes start at 500 euros – installation not included. Many German states, towns and cities offer incentives to install private charging points. And the German government has plans to limit the scope for neighbors to object to private charging points in the future.

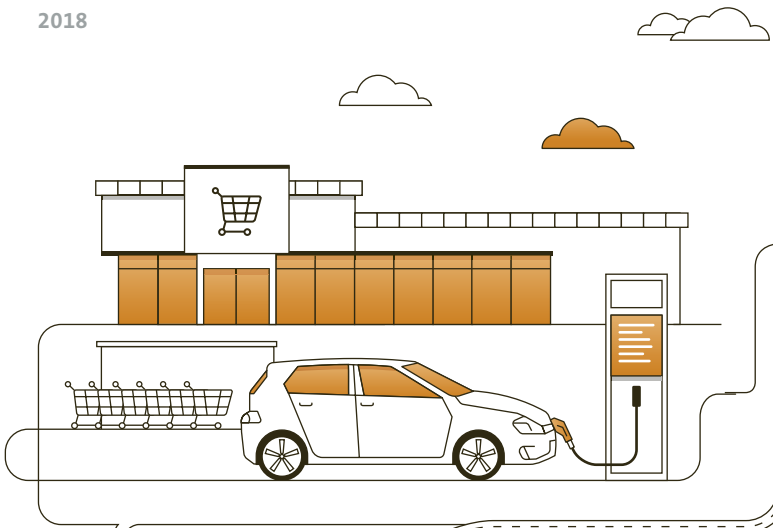
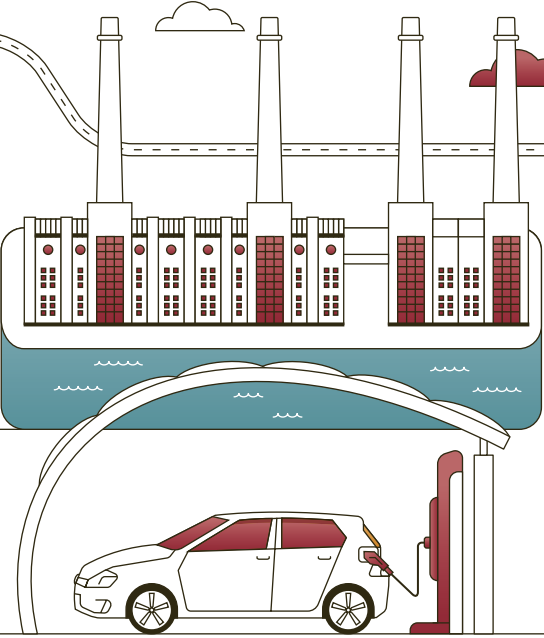


STATION 2 ON THE ROAD

If Jana wants to travel long distances in her e-car, she will need reliable charging infrastructure. IONITY, a joint venture set up by BMW, Daimler, Ford, and the Volkswagen Group, including Audi and Porsche, has announced plans to build 400 high-power charging stations by 2020. To do this, the joint venture has partnered with filling station operators in 18 European countries. The filling stations guarantee to provide up to 350 kW at an average of six charging points. Jana's e-Golf would be charged in around 15 minutes.

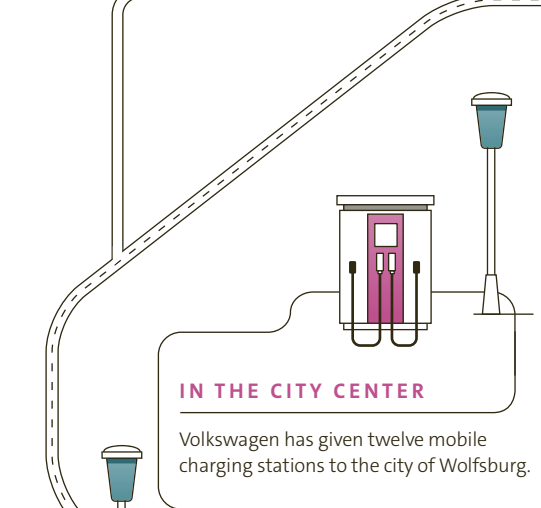
STATION 3 AT WORK (DESTINATION CHARGING)

Increasing numbers of companies are making charging points available on their premises for employees to use free of charge. In Wolfsburg, Jana can charge her e-Golf for eight hours. Since early 2017, she hasn't even needed to pay tax on it as a non-cash benefit. And she doesn't have to pay motor vehicle tax in the first ten years either. Volkswagen provides over 200 charging points around its Wolfsburg factory. They can be used by employees and others.



STATION 3 WHILE SHOPPING (DESTINATION CHARGING)

Many supermarkets, furniture stores, and shopping centers have also installed 50 kW rapid charging stations for their customers. On days when she's working away from the office, Jana could charge her car here for free to 80 percent of its capacity in 45 minutes, and do a bit of shopping before she drives home. However, this rapid charging puts a higher strain on the lithium-ion battery in her e-Golf, so Jana only makes use of this option occasionally.

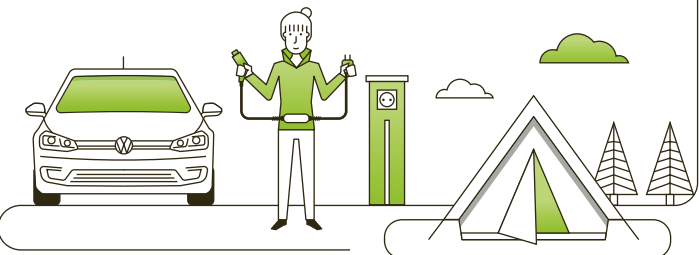


IN THE CITY CENTER

Volkswagen has given twelve mobile charging stations to the city of Wolfsburg.

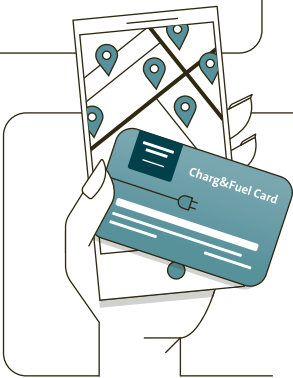
STATION 4 OFF THE BEATEN TRACK

Jana wants to go camping for a weekend in the Harz Mountains with her e-Golf. There is no charging point there (yet). She needs either a campsite with a mobile charger or an adapter to connect her e-Golf to a conventional power socket. However, she should do that the moment she arrives because it will take a whole day to charge.



NAVIGATING THE PRICING JUNGLE

Prices for charging e-cars vary significantly and are difficult to compare. Providers can charge by time or by kilowatt hour. In Germany, the Charge&Fuel card and app offered by Volkswagen Financial Services provide standard prices for green power at 7,500 charging points, with monthly billing.

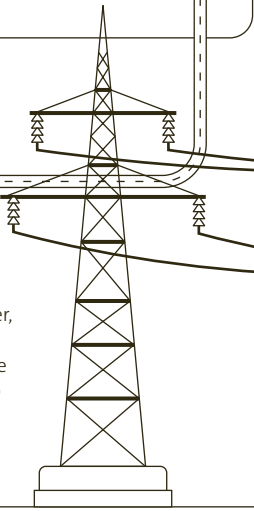


FACTORS BOOSTING E-MOBILITY

- Lower costs for models
- Greater driving ranges
- Incentives for buying new e-cars
- Tax incentives for company cars and special depreciation rules for e-cars used for commercial purposes
- Charging points installed as standard in new buildings
- Low prices for green power across the entire life cycle of the vehicle

TEAM PLAYERS

Before the car can be charged, three players on the provider side have to work as a team: the network operator, the electricity provider, and the provider of the individual charging point. There are numerous, differing arrangements here, which is why payment systems are not the same at all charging points. Alternatively, Jana could pay to charge her car via her mobile phone operator – a fourth player. Simple, standardized payment systems could make electric vehicles more attractive.



¹ Upon request, over the entire life cycle of around 200,000 kilometers. Electricity from renewable sources is used in the manufacturing of the battery cells and in production in the plant itself. Unavoidable emissions are compensated for by certified climate protection measures.



City, countryside, mobility

Volkswagen is proud of having made mobility available to everyone with the Beetle and Golf. But today, debates around air quality and connectivity are putting new demands on the free access to mobility – and the Group must ask itself what this means for its business model.

Text — Daniel Kastner Photos — Maximilian Virgili

Mobility, wherever you look: in the city, diverse means of transportation are concentrated and combined – both private and public, on two, four, or more wheels.



The first driving bans in German cities have been enacted. The Federal Administrative Court ruled in February 2018 that these are generally admissible under certain conditions. Three months later, Hamburg became the first city to impose such a ban when it barred older diesel vehicles from two stretches of road.

City dwellers are surely not to blame for these developments. Nonetheless, part of the population is now facing restrictions – and not just people who have leased a new company car this year. Policymakers and manufacturers fought to the bitter end over short-term transitional solutions. For the future, however, fundamental questions must be answered: what social responsibility does Europe's largest automaker assume for citizens' mobility? What does the Volkswagen Group want to do – or what can and must it do – to enable access to mobility for everyone, independent of age, fitness, financial means, place of residence, or infrastructure? And how can the company, which is increasingly competing as a mobility service provider, combine equitable participation and business?



There is no scarcity of vehicles in this country of drivers. According to the German Federal Motor Transport Authority, 46.5 million passenger cars were registered as of January 1, 2018, while nearly 39 million people hold a German driver's license. Environmental protection organizations and automakers are united in their assessment: there are too many cars in cities, powered by the wrong engines.

The streets are clogged at rush hour, and residents and commuters are stressed – in part because over 99 percent of the cars still have combustion engines that, despite filters and catalytic converters, pollute the air with exhaust. With the electrically powered car, a quiet, emission-free solution is on its way. But no one in government or industry wants to forbid people from driving their cars today.

Particularly in cities, there are already many alternatives to the private automobile: car sharing, local public transit, taxis, and shuttle services, as well as private or rental bikes or scooters. And thanks to the dense urban infrastructure, many routes can also be walked. “Customers will continue to decide how they want to get around,” says Ole Harms, CEO of the Group subsidiary, MOIA. “But in the future, they’ll have even more possibilities.”

Mareike Rauchhaus, spokeswoman for the bike-sharing company nextbike, doubts that inner-city residents will need private cars for much longer. “Private individuals in inner cities actually don’t need cars anymore at all,” she says. “For shopping and transporting kids, you can also use a cargo bicycle.” According to the company, next-

bike currently has some 50,000 bicycles in operation – mostly in big cities and university towns in Germany, but also in Glasgow, Zagreb, Warsaw and Kiev, and even as far afield as Delhi, Beirut, Auckland, and Pittsburgh.

Rauchhaus doesn’t have any data on whether the company’s customers are using newfound means of transport instead of buying a car, or even getting rid of their cars in favor of bikes. But: “In our experience,” she says, “the share of bicycle traffic is growing in the city.” That doesn’t mean that some young families on the outskirts of town don’t prefer to drive their car or take the train. It’s all about options.

In the city, however, the bicycle is giving the car some serious competition. In Berlin, the nation’s first “bicycle law” will, among other things, create



Miles from anywhere: the greater the distance from the city, the longer the routes traveled. In the hinterland, trips that can’t be made on foot are covered in the car. But even here, the private automobile is no longer necessarily the measure of all things.

more traffic lanes for cyclists – sometimes at the expense of motor traffic. Copenhagen, Groningen in the Netherlands, and Münster may all be special cases, but more cities are looking to them as models for bike-friendly traffic planning.

Competition, it is said, is good for business. Sooner than expected, the Volkswagen Group may be forced to implement its strategy of becoming a mobility service provider that moves people from A to B – with (almost) any vehicle. In the inner city, these will preferably be electric.

The first initiatives are already up and running. In Hanover, MOIA has put its first shuttles on the road, and Hamburg is following suit in early 2019 with a newly developed electric version. Partnerships with the cities underlie these

efforts. The Group subsidiary plans to collaborate with the Hamburger Hochbahn, which will take up the vehicles in their mobility platform “switchh” – which already includes rental bikes – in order to facilitate a smooth transition between the different means of transport. “Ride sharing and ride pooling are an important addition to the mobility offerings that have been available up to now,” explains MOIA CEO Harms. And in terms of convenience, they’re often superior to bicycles – such as when it is raining or snowing, or when passengers have bulky baggage, aren’t physically fit, or just plain don’t want to get on a bike.

Under the umbrella of “Volkswagen We”, the brand is bringing together its digital offerings around individual mobility, including an app for convenient parking and, from 2019, a car-sharing

offer in Berlin with 1,500 e-Golfs. And for the “last mile” – from the bus stop or shuttle station to the front door – experts in the Group are also considering a possible move into the micromobility market, with scooters or Segway-like concepts.

Accessible vehicles à la MOIA that users don’t have to drive themselves could also promote more equality in urban mobility – occupying a position between bus and taxi.

Today, however, it is already worth taking a look at the countryside, where as in the cities, transportation is strongly shaped by the infrastructure and people’s mobility habits. Here, too, the ways of getting around are becoming more diverse.

In the Netherlands, Denmark, and Germany’s Ruhr region, express bicycle routes attract cyclists from the hinter-

land for longer commutes. Major cities in South America and Asia even rely on suspended cable cars to connect suburbs with the city center. And companies like nextbike see their greatest growth potential in e-bikes and cargo bikes – and in the outskirts of cities.

Automakers assume that rental bikes will continue to occupy a niche in inner cities in the future. And that at the edge of the city and in the country, private cars will remain indispensable – perhaps in conjunction with park-and-ride lots and commuter trains connected with the city center. Indeed, the rate of car ownership is much higher in less densely populated areas than in the city. In Mecklenburg-West Pomerania, for example, there

are 530 cars per 1,000 inhabitants, compared to just 330 in Berlin.

In the country, the need for mobility is at least “comparable to that in the city,” confirms Wolf Warncke, a VW dealer in Tarmstedt, 20 kilometers northeast of Bremen. Warncke knows the rural mobility situation well. “The routes are just different,” he says, adding that people have adapted to the circumstances.

In Tarmstedt, things are like this: rail service to Bremen was discontinued back in 1956. Unlike the neighboring municipalities, Tarmstedt is at least linked to the city by a bus line. When Warncke has to run errands locally, he rides his bike. When he goes to Bremen, he takes the bus. He makes other longer

trips by train or – as one might expect of a car dealer – in his e-Golf.

Few alternatives, long distances – doesn’t that make a private car the best option in all cases? “I know 20-year-olds

“There are better, more flexible solutions for mobility than just a private car or the bus.”

here in the village who think a car of their own would just be a burden,” says Warncke. The urban trend has reached the countryside, he explains. For a local car dealer, this is a balancing act, for automakers like Volkswagen it’s a hint.

“There’s a misconception that there’s hardly any rural infrastructure left,” says Melanie Herget of the Innovation Center for Mobility and Societal Change, or “InnoZ” in Berlin. Herget coauthored the study, “Securing rural mobility”, published by the Friedrich-Ebert-Stiftung in early 2018.

“The bus connections are often better than you’d think,” she says. “But a lot of people have bad memories of the school bus. They get their driver’s license

when they turn 18, and after that, they only take the bus when they absolutely have to – when they get too old to drive, when they break their leg, or when they have to give up their license.”

In the countryside, there also isn’t the same “bundling potential” for various means of transportation as in the city, says Herget. The rural settlement pattern is exactly the opposite: few people in a large area, meaning the bundling potential is close to zero. Where buses are rare and trains don’t run at all, other means of transportation are called for: “What makes more sense there are minibuses or cars that are available only on demand and with advance notification.” They can take either fixed or flexible routes, depending on need – traveling a set route, covering a certain area, or taking passengers from door to door.

From Herget’s perspective, a multitiered solution has proven effective: bus lines running along principle routes, such as highways, connect a number of villages with each other or with a larger town or city with a train station. “These buses should operate across rural district borderlines, come at least once an hour, and not stop at every mailbox,” the researcher says.

“Tributary solutions” are then needed to link villages to the main routes, she explains – for example, the above-mentioned park-and-ride lots, on-call buses, or so-called dial-a-ride transit. As early as 1982, Volkswagen supported a solution of this kind, the “telephone bus” in the Weserbergland region. It was too inconvenient at that time, and in the end, apparently also uneconomical.

These might all sound like public services that the state has to provide. Wolf Warncke, the auto dealer, doesn’t think so. He calls for a “change in attitude”, including on the part of his fellow village residents. “There are better, more flexible solutions for mobility than just a private car or the bus,” he says. One shouldn’t “just wait for the government to take care of it.”

A few years ago, Warncke did something that many people only know from the city. With a small group of like-minded individuals from neighboring villages, he launched a car-sharing network – with electric vehicles. They started in 2015 with six cars in five villages. It began the way one might imagine mobility in the countryside: customers got the car key at the front desk of the doctor’s office, for example. After using the car, they plugged it in at the same charging station where they had picked it up, then left the key off in the owner’s mailbox. Reservations could be made by telephone and over WhatsApp, but that wasn’t always reliable due to the shaky Internet connection.

“Word got out about the scheme extremely fast,” says Warncke. “After just eleven months, the first e-Golf was operating in the black.” An eighth car can probably be added to the network soon, and Warncke hopes that a rental car will someday be available in each of the 13 affiliated villages. So far, though, demand hasn’t caught up with even the limited supply.

Yet it may be poised for a significant increase. In mid-August, the car-sharing pioneers signed their cars over to the Greenwheels network – a subsidiary of Volkswagen Financial Services AG. Customers now book their electric rental cars by app and may, if they so choose, drive them as far as Bremen, Hamburg, or Berlin.

Warncke and the others are continuing to mobilize. They have placed red-painted “passenger benches” in a number of the villages. The idea comes from the Eifel region, where prospective passengers hang a sign with their destination next to the bench and wait for a driver to pick them up.

Warncke has also warmed to a suggestion from mobility researcher Melanie Herget: the kind of “a-for-profit chauffeur service” that is being prohibited in ever more cities. Uber for the countryside. Something like that is conceivable “as an addition”, says Warncke.

Options: while road users in rural areas can at best choose between their own car and the bus, the challenge for urbanites is often the question of which public or shared mode of transportation to use today.





Deceleration: the need for mobility is similarly high in the country as in urban areas. Car sharing, shuttle services, and intelligently scheduled buses can bring rural mobility up to speed with the city – without the rush.

The different modes of transportation should ultimately complement each other in ways that are useful and user-friendly – and bring relief to metropolitan areas, for commuters and inner-city residents alike.

Getting there is sometimes arduous, and it isn't a straight path. Car sharing, for example, should actually also reduce the numbers of cars in the city, or at least slow their increase. According to the German Environment Agency, one car-sharing vehicle can replace 15 private autos. In early 2018, Germany's umbrella association of car-sharing providers, the Bundesverband CarSharing, counted nearly 18,000 vehicles in the country's car-sharing systems. The association's data indicate that two million people in Germany make use of such offers. However, a joint study by the Öko-Institut

and the Institute for Social-Ecological Research in Freiburg recently showed, at least with respect to the free-floating offers, that the number of vehicles the growing car-sharing fleets put on the streets exceeds the small number of private cars they replace.

And because car-sharing vehicles are driven more intensively than private cars, they don't necessarily reduce traffic in their area of use. Then again, car-sharing vehicles are more frequently replaced by newer models and therefore introduce innovations to the street more quickly. This can already be seen today: among car-sharing vehicles, the share of electric and hybrid cars is over ten percent, whereas at the start of 2018, of all private cars in Germany, this share only came to 0.6 percent, according to the Federal Motor Transport Authority.

Reducing traffic in the cities and enabling rural regions to participate in new forms of transportation will also require measures, which at first glance have nothing to do with mobility. These include fast Internet in the countryside, just to enable the use of app-based ride-sharing and rental systems. And a renaissance in company-provided housing could shorten commutes – just like coworking and home offices, especially in small cities.

But if a private car is no longer essential, where does that leave automobile dealers? For one thing, they will surely continue to sell cars to private individuals. In addition to this, Wolf Warncke is thinking about chauffeur service commissions, lease-to-own programs, vehicles for car-sharing providers. "We'll just have to become general facilitators in matters of mobility," he says. ◀



EXTERNAL VIEW

“Let’s finally be honest”

If we want to achieve the climate goals, we can’t shy away from uncomfortable measures. That goes for government, as well as every automaker.

“Limiting global warming is one of the greatest challenges of this century. The summer of 2018 gave us a foretaste of what climate change will bring, with crop failures impacting farmers, fires devastating our forests, people exhausted by heat, schools sending students home, and companies interrupting their operations.

This is a picture of a world in which we can no longer live well, or in which we would want to live. The conditions we are now confronted with are a result of the failure of the international community to take the measures necessary to reduce CO₂ emissions to the targets it has been setting since the end of the last century. This includes Germany, the supposed role model in climate protection, which missed the first goal, for 2005, and has given up on the 2020 target. And the goal for 2030? It will meet the same fate if we don't finally start being honest.

Every economic sector must make its contribution – including transportation. The federal government has therefore imposed a special target on this sector for the first time: emissions reductions of at least 40 percent by 2030. Germany is striving to complete the shift to climate-neutral transportation by mid-century.

If we are honest, this will only be possible with an uncomfortable policy mix. Promoting innovative technologies and mobility services won't be

enough. Ambitious regulatory standards and measures will also be necessary – for example, making electricity derived from fossil fuels more expensive than that from renewable sources. The old must make way for the rise of the new. All too often, however, the automobile industry has

thwarted political aims in defense of the status quo – through actions that haven't always been honest, let alone exemplary when it comes to climate protection.

Let us look at Volkswagen in particular. The Group seeks to be a role model in terms of the environment and integrity. What does that mean? For electromobility to succeed, we have to work for, not against, ambitious CO₂ fleet targets in Europe. For the energy system transformation to succeed, we must work for the rapid expansion of renewable energy and the elimination, not the preservation, of diesel subsidies. And to make

jobs in Germany viable for the future, we must become pioneers of the transformation of the transport sector – and not step on the brake. In short: Volkswagen must finally get honest with itself. The next chance to do this is now!” ◀



Christian Hochfeld, 49, is executive director of the think tank Agora Verkehrswende, founded in 2016. He previously led the German-Chinese cooperation on sustainable transportation in Beijing.

FURTHER READING

Agora Verkehrswende (2018), BDI – Federation of German Industries (2018), National Academy of Sciences Leopoldina, acatech, and Union of the German Academies of Sciences and Humanities (2017).

Energy for e-mobility: the Volkswagen Group has scheduled 27 models for launch on the basis of a new e-drive platform over the next four years. By 2025, 80 new electrified models should enter the market – including some 50 fully electric vehicles. This dynamic must be maintained, if soon thereafter more than one in three cars in Europe will have to rely solely on electricity to meet CO₂ reduction targets in the transportation sector. And climate protection will require that the energy used to produce batteries and charge vehicles be generated carbon-neutrally.

Crater landscape: the rocks in the artisanal mining areas are peppered with holes. Many more people prospect for cobalt here than in the industrial mines.

REPORT

Mining scars

Without cobalt there would be no electric vehicles today. Even the Volkswagen Group cannot currently manage without this rare material. Yet in the Democratic Republic of the Congo, the country where most of the world's cobalt is mined, working conditions and human rights are often under pressure. Daniel Göhler, 33, who works in Procurement, where he is responsible for sustainability in supplier relations, traveled to the Congo in spring 2018 to find out what the Group can try to do.

Text — Daniel Kastner Illustrations — Simon Prades



O

n a flight from Addis Ababa to Lubumbashi in the south of the Democratic Republic of the Congo (DRC). Business Class. Lamb and champagne are on offer. A surreal experience.

The DRC suffers from unbelievable levels of poverty and is being ripped apart by civil wars and Ebola epidemics – but this is where the world’s biggest cobalt reserves are to be found. The mineral that is vital for all of today’s smartphones and electric vehicles lies just a few meters below the surface here. Like all car manufacturers, the Volkswagen Group needs cobalt for the batteries in its electric vehicles, but is investigating alternatives.

Even as the plane approaches the airport, I notice a gaping terraced hole the size of a soccer field – a prominent gash in the surrounding scrubland.

The large cobalt deposits in the Congo have triggered a serious mineral rush. International groups have leased thousands of hectares, and dealers are busy buying and selling cobalt, sometimes via dubious channels. The cobalt that the Volkswagen Group currently uses in its batteries comes exclusively from industrial mines. We keep “blacklists” of companies that buy cobalt from artisanal miners – and don’t let them into our supply chain. We require our suppliers and sub-suppliers to ensure that processed material is not obtained from dubious sources.

Nevertheless, artisanal mining dominates the Congolese cobalt market. Local communities and migrants seeking their fortune are digging on their own initiative for the brittle, shiny silver or green

substance that only occurs naturally as an ore in combination with nickel, iron, or copper.

“For most people here, work in artisanal mining is a curse,” says Sister Catherine, who was on the airplane with me. “But there is absolutely no other source of income in the region.”

Sister Catherine is a member of an NGO called Good Shepherd, and will accompany me for some of my journey. She actually comes from Kenya, and was sent to the Congo by Good Shepherd in 2012. The NGO builds and runs schools in some artisanal mining communities, teaches women to farm, and has also set up a microfinance system.

Having collected our suitcases at the airport, we pick our way through the chaos, passing all the Chinese passengers who were on the same flight, and feel the harsh Congolese sun on our backs as we cross the parking lot.

On the way to Kolwezi

Together with Sister Catherine and experts from a development organization, I am driven nearly 300 kilometers to our hotel in Kolwezi.

I would like to get an idea of how the Volkswagen Group’s sustainability standards are being complied with in the industrial mines because some of them supply material for the batteries in our electric drives. And I want to find out what the Group can try to do to improve living and working conditions in the artisanal mines and in the communities surrounding them.

Our journey takes four hours on a paved and tarred road built by Chinese companies. Almost everything that makes cobalt mining lucrative here is owned by the Chinese: mining concessions, intermediate trade, and processing plants.

On the way, Sister Catherine paints a gloomy picture of Kolwezi. In her husky

voice, she tells stories of child labor and prostitution, of alcoholism and crime, of fatal accidents, insecurity, and pollution, and of disintegrating communities. She laughs almost indulgently when visitors from wealthy Europe ask ingenuous questions – like whether it is not the case that mine workers earn more than average. “Yes,” she says. “But with those working conditions, I don’t see it as a fair wage.”

For companies like Volkswagen, there is a conflict of aims: the automotive industry, policymakers, and increasing numbers of customers are demanding electric vehicles. And at the moment there’s no way of supplying them without cobalt. Demand is increasing, but working conditions for many miners in the Congo, and living conditions in the artisanal mining communities, often remain extremely problematical.

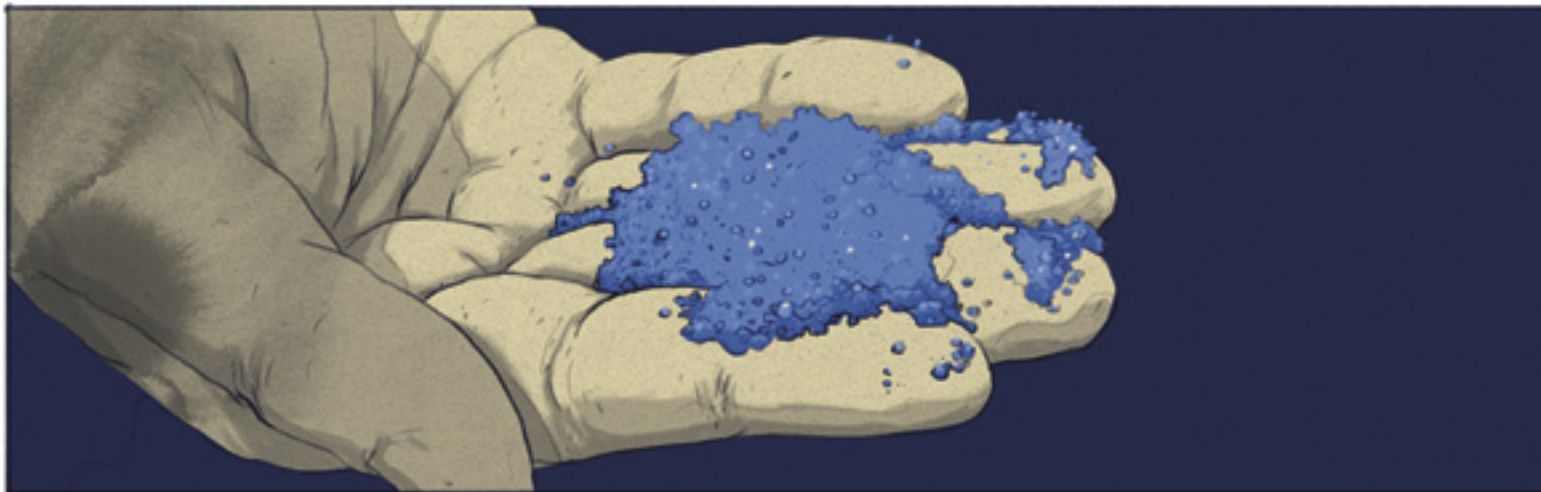
That’s why the Group is working with other buyers on minimum standards for cobalt extraction in artisanal mining, so that the artisanal mining regions can be developed in a systematic and verifiable manner in the future. The Group is a member of the Responsible Minerals Initiative, which aims to ensure respect for human rights, employment, and environmental standards in international mining – by issuing certificates for mines and smelters. There are already certificates for tin, tantalum, tungsten, and gold, but not yet for cobalt.

A promising mine?

This road is not tarmacked, and it’s riddled with potholes. It takes us over an hour to travel less than 30 kilometers along the Zambian border. We pass numerous small huts and three larger communities. Most of the huts are made of sheet metal and plastic. I see only a few brick-built houses. In some places, people are growing corn. Children and adults sit on the verge selling fruit, fuel, and charcoal.

Bare hands: protective clothing and hard hats are rarely used in artisanal mining.





Rough shine: communities sieve and collect the cobalt ore, put it in sacks, and sell it to dealers.

COBALT IN FIGURES



Deposits

Nearly 120,000 tons of cobalt were mined worldwide in 2017. Almost two-thirds of it came from the Congo, and 80 to 90 percent of this came from industrial mines.



Price

A tons of cobalt costs a little over 60,000 U.S. dollars at the time of going to press.



Battery

The cathode of a 450 kilogram “NMC 6-2-2, MEB I.D. 55 kWh” lithium-ion battery system contains around 12 kilograms of cobalt.

Big trucks thunder down the road all the time, throwing up huge clouds of dust. They are loaded with sacks of cobalt and copper.

Most of the vehicles on the other side of the road are coming from the industrial mine that we are going to visit. Conditions here are not like those in the artisanal mines. This mine is still being set up, and even in this early phase, those in charge are keen to comply with the sustainability standards. There are plans to set up a fund that can be used to finance schools and agricultural projects. These are in fact good conditions for kick-starting a joint development project.

People who work for the industrial mining companies can earn between 400 and 500 U.S. dollars a month – several times the average income in the Congo. Some of the mining companies also offer free medical care, school fees, and free transport. But such jobs are rare. Helping to ensure that more jobs are created in mines like this one could be the way to go.

Uncontrolled mining

Many of the industrial corporations are connected to the widespread artisanal mining operations in one way or another. Thanks to Good Shepherd, we are able to visit a number of these mines.

They include a mine that is being run by an artisanal and small-scale mining (ASM) cooperative. The ASM cooperatives are non-industrial and are often run by families or village communities. The cooperative sells the cobalt to industrial companies – and often receives ten percent of the revenues from the sale of the processed mineral.

The mine consists of lots of holes: workers dig down to a depth of 30 meters with hammers, chisels, and shovels and then dig horizontally. However, none of the 100 or so men is wearing protective clothing, dust masks, or hard hats. We

don’t see any women or children – they are not allowed to work here.

In order to be able to procure raw materials from a cooperative like this one, the company in charge would have to introduce convincing health and safety measures, set up an environmental management system, and obtain an overview of all the people living and working on the concession. It would have to draw up a plan for how it intends to help the most vulnerable members of the community, especially children.

Someone who mines for cobalt without a permit can earn much more than an employed mine worker, depending on where they mine, how far it is to market, and what prices are paid there – something that varies widely between regions.

This is one of the reasons why thousands of artisanal miners can be found in the cobalt mining area, prospecting “illegally” on the vast concessions of international corporations. This holds true for the next mine we’re visiting, too.

Hundreds of people work here. Once again, we see dozens of holes in the ground, some of them covered with plastic sheeting. The men climb down into the shafts using notches cut in the rock. Here too, no one is wearing hard hats or using safety ropes. The workers call these unsecured tunnels “veins”. Many of the veins run right under the communities. In some places, houses and entire neighborhoods have fallen into the tunnels below.

Sister Catherine calls it “Uber mining”. Miners are left to their own devices. Because they are not employed, the concession holders are not bothered about occupational safety or social security. “If you ask them why they aren’t doing more, they don’t understand at all,” Sister Catherine says. “They say, ‘we are actually doing something. We are creating jobs.’”

Finally, by a small river, we meet a couple who spend every day mining for cobalt in water holes. All around, women and children are using mosquito nets to sift the cobalt carried downriver from a neighboring mine concession. In the scorching sun I notice that one young woman has a baby strapped to her back. The workers sell the cobalt for a pittance on the black market.

Now, on the way back, I also notice the makeshift warehouses by the edge of the road, separated by orange or blue plastic sheets. When the plastic sheets blow in the wind, I can see sacks piled up behind them.

Terraces: the dozens of terraces cut for industrial mines often result in craters the size of soccer fields in the landscape.

I discover that people here are openly dealing in illegally mined ASM cobalt.

The dealers – most of whom come from China – test the cobalt and copper content using analytical devices. However, there is a rumor that a software program manipulates the results to lower the prices. The dealers often have profit margins of 70 percent or more.

Agriculture and schools

A dirt track takes us through lush vegetation – trees, bushes, and a few small fields – into a beautiful valley. On an area of around 40 hectares, the sisters of Good Shepherd are teaching women from a number of local communities how to grow fruit, vegetables, and cereals and raise goats, pigs, hens, and fish. They also learn to read and write. The first women are now growing their own food in their communities. They are providing for their families and also selling some of their harvest at market to earn money. Many of them used to work in the mines. Some women, who were too weak for mining, became prostitutes.

Paradoxically, the soil in the Congo is extremely fertile in places, yet because of civil war, internal displacement, natural disasters, and epidemics, the Congolese farmers cannot feed the population. Even staple foods have to be imported. For the communities, mining is a faster, more lucrative source of income – despite all the dangers.

The farming program is making the communities a bit less dependent on cobalt mining. Schooling also helps, which is why Good Shepherd is running schools in a number of communities. Some of them cater for more than 1,000 children. Schooling is free of charge, as is one meal a day.

This is not the norm, however. Primary schools charge between 5 and 70 U.S. dollars per month, while secondary schools charge between 11 and 100 dollars, which is more than many parents can afford. As Sister Catherine explains: “School can keep the children busy up to lunchtime. But many of them go back to work in the mines in the afternoon.” The schools run by Good Shepherd are financially dependent on donations from the NGO itself, from private foundations, and from businesses.

Where to start

The cobalt issue is too complex for simple solutions. That’s something I learned on this trip. Anyone who wants to help must do more than focus on one area. Schooling and farming can reduce dependence on mining, and offer alternatives to women and children, in particular. If working and living conditions in the mines and communities improve, the cooperatives could obtain a certificate for “clean” cobalt – and a purchase guarantee from the dealers or

from our partners in the supply chain. This would also create income security for the communities.

To achieve this, it would be necessary for Congolese laws to be enforced here – along with international standards like those of the OECD. “That really would make a big difference,” says Sister Catherine.

I also see an obligation for the processing companies to make a difference. I traveled here to find out how we can help in as practical a way as possible. I plan to discuss two options with in-house and external experts, especially with members of the Group’s Sustainability Council, which funded the trip.

Firstly, we could work with development organizations like Good Shepherd on projects that “only” improve the situation in the communities and support schools and agriculture in the areas around the mines. However, this would ignore working conditions in the cooperatives – and we would not be sourcing cobalt directly from them either.

Alternatively, we could support similar projects through an industry initiative while staying in the background ourselves. The Global Battery Alliance of the World Economic Forum would be a potential platform, for instance. Through them, we are already working with partners like the OECD, NGOs, mining companies, and the African Development Bank.

Next time I visit the Congo, I hope to see more women working in agriculture and more children being able to attend school. I would like the mines to become safer, and the workers there to be paid properly and to be able to rely on their employers. I would like our trip to have set in motion a humane and environmentally responsible approach to cobalt mining in the Democratic Republic of the Congo – in both the industrial and artisanal mines.

SUPPLY CHAIN RULES

The Volkswagen Group expects its suppliers to comply with central environmental, social, and compliance standards. Compliance is monitored, and sanctions are applied in serious cases. In supply chains with a particularly high risk of potential human rights violations, business partners must take on additional duties of care. A policy for sustainable procurement of raw materials requires transparency concerning the smelters from which minerals like tin, tantalum, tungsten, and gold are sourced – to rule out the possibility of directly or indirectly contributing to armed conflicts. In suspected cases, disclosures must be made concerning the origin of materials connected with potential human rights violations – for instance, working conditions in cobalt and mica mines.

POINTS OF VIEW

Lately, CEOs have taken the spotlight as political actors, positioning themselves against right-wing politics or calling for the regulation of future technologies. A new role model?

“CEOs are influential political players, whether or not they realize or exercise their power.”

Georg Kell

I believe that there is now a strong case for CEOs to more boldly address some of society’s major issues. Because they control wealth, the fate of employees, and the products they market, CEOs are influential political players, whether or not they realize or exercise their power. They can realistically aspire to statesmanship by acting for the common good; not just the immediate interests of their companies.

Inequalities have been increasing sharply. The rise of a new protectionism is part of a backlash against globalization that is starting to impact business itself. Another major challenge is the declining ability of the public sector to protect public goods, particularly the environment. Who can identify pathways to decarbonize the economy? What do effective policies to that end look like? Sustainable mobility, for example, must be supported by smart infrastructure and clean energy. Traditionally, we would expect governments to address these issues. However, there are good reasons to believe that governments today may not be in a position to do that alone.

On the other side, corporations have a self-interest in stepping up, and are well positioned to do so. Fundamen-

tally, they are effective at problem solving. They can act globally. They have access to resources, skills, and technology. As the influence of business has grown, so too has its ability to shape the provision of the public goods that are essential for market stability.

There is an understandable reluctance for firms to get involved in public affairs. Giving companies a larger role can certainly create conflicts of interest. And, of course, many CEOs fear that a more public role might expose them to backlash.

However, the risk of action needs to be balanced against the risk of inaction. If companies remain passive, they could soon find themselves damaged by an environment of escalating political risk. Regardless of political inclinations, corporate leaders have a common interest in preserving the rules of the game and defending the drivers of growth. Ultimately, business cannot succeed if societies fail. ◀



Georg Kell, 63, is the spokesperson of the Group Sustainability Council. In March 2018 he and two co-authors of Boston Consulting Group published „The Case for Corporate Statesmanship“.



Illustrations: Sébastien Thibault / agoodson.com, Uli Knörzer (2)

Globally operating companies bear responsibility for the economic development of entire regions, countries, and continents. Volkswagen’s engagements in Ghana and Nigeria, announced this year, are good examples. Brands and companies of the Volkswagen Group at 170 locations around the world see themselves as corporate citizens.

This is the bar we set ourselves also in the development of technological and social innovations as well, with which we are establishing standards with ever greater frequency – for example in the area of data privacy and data security in autonomous vehicles. We are very aware of our social responsibility in this regard.

We must also be advocates of open, free societies. Today, those who build walls, curb liberties, or even question basic rights harm us all. Racism and racist agitation cause concrete harm to companies and their employees



Dr. Herbert Diess, 60, is the CEO of Volkswagen AG. He considers it part of his duties to publicly represent even controversial viewpoints of the company.

because diversity and international cooperation are prerequisites for success in a globalized world.

This doesn’t make a CEO a statesman, however. Business and politics have different interests and tasks, with their respective representatives assuming different roles that have evolved through history. Companies drive economic development, while the political system organizes majorities behind solutions that concern society as a whole, and assumes responsibility for them.

CEOs assume responsibility for strategic corporate decisions. We integrate social perspectives early in our decisionmaking process, of course. And afterward, we represent our actions vis-à-vis our stakeholders. We don’t get our mandate for these decisions in free and equal elections, though. We get it from our shareholders.

Ideally, our decisions also meet with the approval of employees, customers, and political actors. But we can never make necessary decisions solely contingent on whether they are likely to spark applause in the media or enthusiasm in parliament. ◀

“We don’t get our mandate in free and equal elections. We get it from our shareholders.”

Dr. Herbert Diess

Ethical by Design: Dos and Don'ts

By 2025, the Volkswagen Group wants to be a role model for environment, safety, and integrity. We asked designers and researchers in the Group how they integrate ethics and sustainability into future products and services.

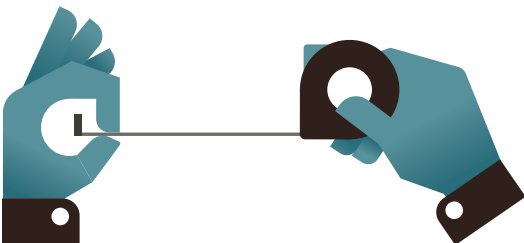
Text — Valdis Wish Illustrations — Gutentag Hamburg

DO

Make it measurable

“If I ask an engineer to reduce a car’s carbon footprint by 150 kilograms, they won’t always know what to do. But if I ask them if they can make a certain part a few millimeters thinner or substitute a material with another one, that is something that they can work with better. We translate environmental goals into technical and measurable ones – that is our understanding of Lifecycle Engineering. A truly ethical, sustainable product is one where every department involved – product development, production, logistics, procurement, and operations – considers sustainability aspects, and takes concrete action to improve performance. Part of this is staying alert to new trends and challenges that perhaps weren’t as apparent ten years ago, such as a local water shortage at a production site.”

Dr. Stephan Krinke is Director of Environmental Affairs at Volkswagen AG



DON'T

Let the user feel stupid

“I was recently in the car with my mother and her friends, and I was the only one who understood the navigation system. They said, ‘we’re not smart enough!’ But when four out of five adults cannot figure out how to use it, something has gone wrong with the design. It’s not intuitive and doesn’t make users’ lives any easier; instead, it’s setting them up for failure. Ethical design avoids this by putting the user at the center of the process. Start by collecting outside-the-box ideas for solving a problem. Then test quick-and-dirty prototypes on different people in different contexts. We learn new, surprising things this way, and it helps us break free from entrenched ways of thinking. The result is a better, more usable product.”

Isabelle Fröhlich is a researcher and product designer in the Future Research department of Volkswagen AG



DON'T

Use food to produce cars

“Today, not everything that is labeled or sold as sustainable really is. We want to improve the full footprint of car components, particularly in car interiors. Part of this is researching and developing a new class of high-quality materials from renewable, CO₂-neutral sources as alternatives to petrochemical materials. Some of these materials probably won’t be found in vehicles for at least another ten years, while others could be used much earlier than that. We also have to look closely at how the production of materials impact ecosystems and people. For example, we shouldn’t use food or agricultural land to produce car components, nor should our choice of materials promote monocultures.”

Dr. Christine Schütz and **Dr. Oliver Schauerte** work in Volkswagen Group Research focusing on materials



DO

Admit failure, then correct it

“Artificial intelligence means being data-driven, so an ethical AI is trained on a well-designed data set. Furthermore, it is constantly observed, controlled, and assessed to check whether the system is behaving according to established guidelines. You should be able to admit failure and correct it. It’s not just about preventing accidents; it’s also about discovering latent misbehavior, such as biases in the system, and fixing them in a transparent way.”

Dr. Peter Schlicht is Project Lead for AI technologies for autonomous driving at Volkswagen Group Research



DO

Design for everyone

“Even great designers sometimes miss the opportunity to look left and right, and ask who might be excluded or what the consequences of their design decisions might be. If we’re designing a door, seat, or touchscreen for a self-driving car, for example, we use inclusive design to shake any assumptions we have about the people who will use these products. This means talking to people who are currently underserved, and asking critical questions early on to ensure we’re being as conscious as possible about our design choices.”

Chandrika Jayant and **Christian Lorenz** design user experiences at Volkswagen Group’s Future Center California

“We all know that seniors can face challenges when it comes to mobility, but when you spend a whole day with them, you really start thinking about things differently. Some people have been disabled for many years, and have developed their own strategies for circumventing problems. So, to find out what they need, you have to be an alert observer and listener. Designing for ‘extreme users’ – such as people with disabilities – will ensure that everyone can use a product. When a product only serves the needs of its young, urban, digital native designers, then it has nothing to do with ethics.”

Lukáš Kendík works on human-machine interfaces for seniors at Volkswagen Group Research



Study author Prof. Dr. Christopher Kopper teaches history at Bielefeld University.

Guilt and atonement?

In this Shift interview, historian Prof. Dr. Christopher Kopper talks about his study on the role of the Volkswagen Group during the Brazilian military dictatorship – and the lessons Volkswagen should take away for its involvement in China.

Text — Daniel Kastner Photo — Mario Wezel

Shift: Where do you start with research for this kind of study?

Brazil or Germany?

Prof. Dr. Christopher Kopper: I started with the Group archives in Wolfsburg, which are very well organized. I found a surprising number of documents about VW do Brasil, the subsidiary that the Group established in Brazil in 1953. Most of the documents I found in São Paulo were records of the Brazilian Political Police, which shed light on collaboration between the works security department at VW do Brasil and the secret police. There is also an archive at VW do Brasil. However, talks with former employees and visits to public archives were especially important. The company helped with that.

Were you commissioned to investigate particular accusations?

Yes. The assignment came in November 2016 from the Group board member who was responsible for integrity and legal affairs at the time. I was to investigate the accusations contained in the final report of the Brazilian Truth Commission, which was published in 2014, and the lawsuit filed against VW do Brasil by some trade unionists. The Group's top management in Wolfsburg said: our history in Brazil, similar to the Nazi period, needs to be dealt with by an independent historian.

Which accusations were you able to corroborate through your research and which proved unfounded?

A large number of the accusations were corroborated, for instance the collaboration between the works security department and the Political Police. We were unable to corroborate the accusation that VW helped finance the military coup of 1964 or a torture center used by the secret service. There is no evidence of this.

What was life like for the population under the military dictatorship?

The dictatorship really didn't intervene so strongly in people's everyday lives. Many Brazilians weren't affected until they participated in protests, for instance against

restrictions on freedom of the press or the arrest of opposition students.

And what was it like for the VW do Brasil workforce?

The work was well paid by Brazilian standards, the works canteen served good food, employees had their own health-care service, a kind of company-run local public transport system, and leisure clubs. At the same time, the work was really hard. The working day lasted nine and a half hours and there was often overtime on top of that.

You identify the works security department as one of the key collaborators between the company and the military regime. What form did this collaboration take?

From 1969 onward, the managers of the works security department regularly forwarded details of incidents with a political background to the Political Police without any legal obligation to do so. They did this even for trivial matters – for instance, if they found political flyers or if employees were behaving suspiciously. In these cases, the works security department often provided employees' personal details as well. According to the records, reports sent by the works security department to the Political Police also went to the personnel director of VW do Brasil.

When some employees attempted to establish structures linked to the ille-

“The Group didn't concern itself with the political situation in the country for a long time.”

Prof. Dr. Christopher Kopper

gal Communist Party in the company in the early 1970s, they were arrested by the Political Police, and toolmaker Lúcio Bellentani was tortured for months. What was the role of the works security department in this case?

The works security department had passed its information to the Political Police. This information, combined with other sources, helped the police arrest the suspects.

Who worked for the works security department in general?

Compared with a works security department in Wolfsburg, the Brazilian one was fairly large. There was one security officer for every 80 employees, so there were 500 security officers for 40,000 workers. This meant the works security department was able to monitor activities closely not only in the plant, but also in other areas like changing rooms and lavatories.

VW do Brasil

Volkswagen has been in Brazil since 1953. The cult Beetle car was manufactured in São Bernardo do Campo under the name “Fusca”. During the military dictatorship from 1964 to 1985, the Group management initially sympathized with the regime, and the works security department collaborated with the Political Police. In 2015, the Justice Ministry of São Paulo state opened an investigation against Volkswagen. One year later, the Group commissioned its own historical study.



TWO ACTORS



Lúcio Bellentani
A toolmaker who was arrested and mistreated on the VW do Brasil site in 1972.



Karl-Heinz Briam
The personnel director in Wolfsburg urged the managers in Brazil to make conditions there more democratic.

What reputation did the works security department have among the workforce?

People appear to have been quite frightened of it. That’s why the Communist group was very cautious and conspiratorial and only met outside the factory premises.

The top management of VW do Brasil consisted primarily of Germans. Its first CEO, Friedrich Schultz-Wenk, lived up to a large number of clichés: he was a member of the Nazi party and a pilot officer, and he emigrated in 1949. You write that he praised the level of organization of those carrying out the coup. Did this attitude, combined with a certain indifference to the workers, really continue until the 1970s?

Sympathizing with, or indifference to, the military regime was widespread among the German business elite at that time, but also in political circles. German CEOs paid regular courtesy visits to the government in Brazil. And for the West German government – whether it was led by the Christian or social democrats – it was business as usual with Brazil. At the time, Brazil had the same reputation that China has today. It was a growing nation, a country of the future. People wanted to be part of it.

At Volkswagen, this attitude did not end until the arrival of Toni Schmücker, who was CEO from 1975 to 1982. Schmücker took the reports of collaboration between the works security department and the Political Police and military

police very seriously. After the big metalworkers’ strike in São Paulo in spring 1979, he instructed Karl-Heinz Briam, the Group’s personnel director, to find out what had happened there. For the first time, Briam procured comprehensive documentation about wages and working conditions at VW do Brasil. In December 1979, he traveled to Brazil with the chairman of the Group’s general works council and urged the local management team in no uncertain terms to improve conditions.

What makes the Group morally responsible in your view?

The Group didn’t concern itself with the political situation in the country for a long time and didn’t take responsibility for the employees in Brazil until 1979. Before that, it had not asked the managers in Brazil any probing questions. And they in turn didn’t feel any obligation to inform the Group board about any social or political injustices.

How has your study been received in Brazil?

My impression is that the Brazilian public respects the honesty – partly because VW is the first company to face up to these questions. In Brazil, the military crimes have never been prosecuted by the courts because the military passed an amnesty law in 1979, which is still in force today.

What are the consequences of your study?

I have recommended that those affected be offered compensation. Time is running out for this because many of the

victims are already well advanced in years. Hiltrud Werner, the current Group board member responsible for integrity and legal affairs, has indicated that she is open to the idea. Here the problems faced by a multinational group that has to keep an eye on its subsidiaries in other countries become evident, though. The subsidiaries approach some issues with different fears and expectations because of a different political culture and a different way of dealing with the past.

What is the structure of VW do Brasil today?

There is an elected works council with a rather high level of union membership and a very active metalworkers’ union. Working conditions have changed dramatically and are now comparable with German conditions.

You drew parallels just now between Brazil in the 1960s and 1970 and modern-day China – in terms of their economic potential. Should we take the comparison further?

China is a difficult case for the German automotive industry because it is an enormous foreign market and companies don’t want conflict with the government. They are reliant on the government in many ways – and are very respectful. This can also lead to them denying the existence of problems.

Can you imagine historians researching the activities of the Volkswagen Group in China in 10 or 20 years’ time?

Examining the behavior of businesses in dictatorships is a present-day task – in other words, we have to deal with it now, not later. The specific question is whether the Group personnel director keeps an eye on the situation of the Chinese employees and tries to protect them against repression. But this is a matter for management, not historians.

 A PDF of the study is available on the Volkswagen Group website. Short URL: <https://bit.ly/2EEDIRb>



Miracle workshop: the exhibits are converted into furniture for children.



Smart concept: a modular system, untreated wood, and environmentally friendly paints allow for upcycling.

This end marks a good beginning

From November 2017 to February 2018, visitors to the DRIVE. Volkswagen Group Forum in Berlin could experience Shift in the form of an exhibition. True to character, we wanted to do things differently and move something. Even during the planning phase, we were thinking about how the materials employed could be reused in a meaningful way afterwards, once the exhibition had ended. For the “Shifting Shift” upcycling project, we collaborated with creative minds from BAU International Berlin, the University of Applied Sciences HTW Berlin, as well as many “little designers”. By the end of June 2018, we had turned the exhibits into new furniture for a venue of the Arche, an organization for children and youth, in Berlin’s Hellersdorf district. Since then, young people have been enjoying a new signage system, unusual surfaces for sitting and lying down, and handy shelves and bookcases in the former school building.

Reading and being read to: at the Arche house in Berlin-Hellersdorf, the little ones are happy about comfy reading loungers and convenient bookcases.



Photos: Volkswagen AG (2), Arquivo Público do Estado de São Paulo

Photos: Michael Feser / Archimedes Exhibitions (2), Volkswagen AG (2)

