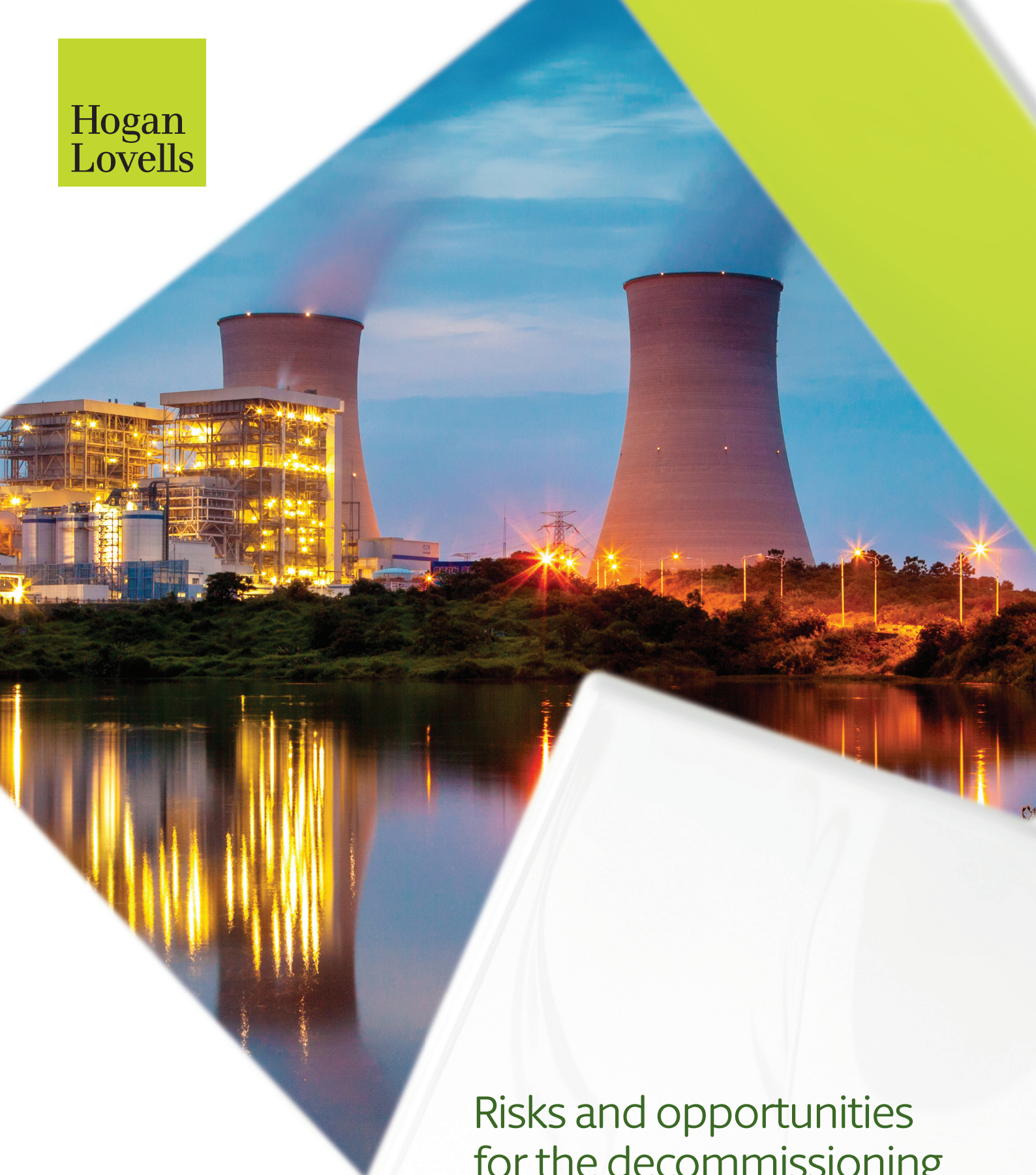
Hogan Lovells



Risks and opportunities for the decommissioning of nuclear power plants in Germany

Our expertise – Your benefit

April 2018

Contents

Introduction: Fukushima and Germany's energy transformation

Who would have thought that a large Japanese city would change the entire German energy environment? The German federal government responded almost immediately to the tragic nuclear disaster in Fukushima, Japan, in March 2011, by making profound changes to energy policy and accelerating the dynamism of Germany's energy transformation, the *Energiewende*.

A lifespan extension for nuclear power plants was approved in October 2010, but by 30 June 2011 the decision had been made to phase out nuclear power. That decision certainly represents Germany's most significant political and economic response to the events in Fukushima. The phase-out is proceeding in steps and is to be completed by the end of 2022 (see 13th Amendment to the German Nuclear Energy Act [*Atomgesetzesnovelle*]).

This is not just a matter of shutting down nuclear power plants. The subsequent decommissioning process poses complex challenges for everyone involved.

Decommissioning nuclear power plants is no longer uncharted territory in Germany, but every decommissioning project raises its own technical and legal issues. They must be resolved early in the process in order to limit the risks associated with decommissioning, avoid any pitfalls, and guarantee that the project will be a success.

A success of this kind very much depends on the risk profile of the individual dismantling project. Meticulous risk analysis and risk structuring are needed to be able to evaluate that profile accurately. The fundamental requirement – and factor for success – is a profound understanding of the regulatory framework applicable to the pending dismantling projects.

This brochure is intended to provide an overview of the regulatory framework and typical risks of dismantling projects, while at the same time pointing out options for structuring and limiting risk. Accordingly, it is intended not just for operators of nuclear power plants but also for the plant construction firms who will complete dismantling work responsibly, and other project participants.

WINNER LEGAL BUSINESS AWARDS 2015 ENERGY AND INFRASTRUCTURE TEAM OF THE YEAR

JUVE AWARDS 2016 Kanzlei des Jahres

Regulatory aspects of decommissioning nuclear power plants

Following the political decision to phase out nuclear power in Germany, operators face the challenge of decommissioning nuclear power plants, which is highly complex and time intensive, not just from the viewpoint of logistics and technical issues but also from the legal and organizational perspective. A series of regulatory procedures must be completed before decommissioning concludes.

For example, the German Nuclear Energy Act *(Atomgesetz, AtomG)* requires a permit for shutting down a plant, safe containment, and dismantling of the plant or parts of it (see section 7 (3) AtomG). A plethora of regulations, official publications, directives, and guidelines are also part of the legal framework to be observed by power plant operators when decommissioning plants.

Errors in planning, in the permitting process, or in execution can cause the already-high costs of decommissioning to skyrocket and lead to protracted delays.

To avoid this, an initial summary of the individual steps in the decommissioning process is provided below:

Decommissioning plans

Even before the dismantling project begins, the operator of a nuclear power plant faces many important questions that require meticulous preparation before they can be answered.

Of vital importance for the work are both the choice of the right decommissioning strategy (direct dismantling or secure containment) and a decision as to whether a comprehensive decommissioning permit or a progressive procedure with successive sub-permits is preferable in the specific case. When dismantling larger plants, it may be useful to divide the permitting process into several separate technical steps. This can make the entire decommissioning process both more transparent and much “leaner.”

There are no blanket solutions since there are so many different types of plants. Each individual decommissioning project is different.

Permitting process

After planning, the power plant operator initiates the permitting process by submitting an application, which requires extensive preparation. The application must contain all documentation needed for a review of the requirements for authorization.

The specific decommissioning method, the risks, and containment and monitoring measures must be described. Other required documentation can include information about measures to protect the plant and its operation against disruptive action or information about verifying the reliability and technical knowledge of the people responsible for management and supervision of the operation. Failure to do the painstaking preparatory work can lead to cost-intensive delays, which ought to be avoided.

Choosing the right decommissioning strategy and providing the reasons for that choice are particularly important for the submission of the application. The submitted documentation has to make it possible to evaluate the feasibility and credibility of the concept, as well as the compatibility and logical sequence of the steps to be taken. The requested work must not make other work more difficult or prevent it from being done.

Experience shows that the competent authorities pay particular attention to safety and environmental aspects when examining permitting requirements.

Operating personnel, the general population, and the environment must be protected against unauthorized exposure to radiation during every phase of decommissioning. Such protection must be all-inclusive. Therefore, it must be provided during all work associated with decommissioning, as well as in the event of incidents and other actions by third parties over whom the plant operator has no influence. The plant operator must take radiation protection measures to ensure that operations of this kind do not release any radioactivity.

Finally, an environmental compatibility study must be done for the entire decommissioning process. It includes determining, describing, and assessing the effects of the project on important objects of protection, such as people, flora and fauna, soil, water, air, climate, and the countryside, as well as cultural heritage and other assets, including any interactions among them. Criteria that must be taken into account include the radioactive inventory that is still present, the absence of major release forces (such as temperatures), and the constantly changing structure of the plant during dismantling.

The public must also be involved in the dismantling. Project-based documentation must be designed so that third-party objections can always be anticipated.

Completion of decommissioning

Granting of the dismantling permit in no way means the end of the regulatory process. Permits granted under laws on nuclear energy contain numerous ancillary provisions and requirements to be fulfilled by the applicants. If they fail to do so, they run the risk of the permit being revoked. For that reason, organizational precautions such as consistent management of ancillary clauses are urgently needed.

Another important requirement is precise documentation of the decommissioning process. The current status of the plant with respect to the radioactive inventory and its distribution, as well as the condition of any buildings, residual operating systems, and components still on the site must be evident and accessible for review by officials. Data about radiation protection for workers and emissions of radioactive substances must also be documented.

Residuals and waste

Following the lengthy decommissioning process, the question remains of how to handle residual materials and waste. Safe handling of material from nuclear power plants is vital. The decision in favor of official release or storage will depend on the level of radioactivity that is still present.

If the radioactivity of a material has been shown to be lower than the clearance levels specified in the German Radiation Protection Regulation [*Strahlenschutzverordnung*], there may be an official decision to release the material. The clearance levels are extremely low to guarantee safety, no matter how the respective material is used. The competent authority will examine whether the applied measurement method is appropriate for the release procedure and whether the material to be released fulfills the relevant criteria.

If the material must be disposed of as radioactive waste, it must be conditioned and placed in interim storage and then in a final site.

Basic facts and special aspects of liability associated with dismantling of nuclear power plant

Those involved in dismantling a nuclear power plant must work with parts of the plant that are subject to different levels of contamination. This involves particular risks and requires a graduated system of safety standards.

Dismantling is subject to the risks specific to using nuclear power to generate electricity, in addition to being subject to the conventional risks of construction (such as delays and the definition of interfaces among contractors and subcontractors). Therefore, when decommissioning nuclear power plants, it is more important than for other construction projects that the participants agree on clear, appropriate provisions on liability. The following summary of the basic facts and special aspects of liability provisions in the context of dismantling projects is intended to provide a useful introduction to the topic:

What provisions on liability apply to the dismantling of a nuclear power plant?

A nuclear power plant is still subject to the German Nuclear Power Act – including its provisions on liability – during dismantling. The following distinction is important for understanding the way liability is organized:

- According to the German Nuclear Power Act, the owner/operator of the relevant nuclear power plant is solely liable for losses based on a nuclear incident.
- The general rules of liability apply to other losses associated with dismantling which are not due to a nuclear incident.

The unusual liability feature is thus the strong focus on the owner/operator of the nuclear power plant. The owner/operator in this context is the holder of the permit. This focus is known as "liability concentration." It applies to all losses due to nuclear incidents. Simply put, this means all losses caused by the radioactive properties of nuclear fuels, waste, or other products or radiation sources of a nuclear power plant. Liability concentration also applies to dismantling projects in other countries, because it is enshrined in the relevant international agreements on liability in the area of nuclear energy (Paris Convention of 1960 and Vienna Convention of 1963). This is primarily intended to protect the owners of nuclear power plants by focusing liability on them – but limiting that liability. Once one knows the particularities of liability law as it applies to the dismantling of nuclear power plants, it is possible to proceed to the most relevant practical questions:

What merits particular attention?

It is not difficult to give a general answer to this. The parties involved in dismantling must – as always – ensure that their agreements contain a careful allocation of risk and effective limitations of liability. But what does this mean in detail? What specific risks must be avoided and what merits particular attention?

Be sure to close potential loopholes in liability

The aforementioned concentration of liability on the owner/operator of the nuclear power plant for losses due to nuclear incidents is subject to a series of exceptions.

For example, the nuclear liability law generally excludes damage to third-party assets located on the power plant premises at the time of the loss event. An example of this is expensive specialty equipment that is located on the construction site and belongs to companies participating in the dismantling. If it is damaged by a nuclear incident, the injured party is not entitled to compensation based on nuclear liability laws, which are focused on off-site public liability. However, damage to onsite property may be covered by onsite property damage insurance. Before beginning nuclear decommissioning work, contractors should ensure that such coverage applies. Otherwise the injured construction company may not be entitled to claims against the owner, and only contractually agreed claims to compensation offer protection to the injured party. A comprehensive contractual provision on liability that includes damage to any equipment being used is therefore more important than for plant construction projects in other areas. This must be adapted to the specific scope of performance to avoid the risk of any loopholes in liability.

Be sure to limit recourse risks!

The risk of a loss due to a nuclear incident is of course considerably reduced by decommissioning the nuclear power plant. But corresponding loss events during dismantling are by no means excluded. Accidents that must be classified as losses caused by a nuclear incident within the meaning of the German Nuclear Power Act can occur when dismantling heavily contaminated parts of the plant. The concentration of liability on the owner of the plant comes into play as a result. However, this certainly does not protect the companies participating in the specific dismantling project against all liability associated with the loss event.

The liability concentration relates only to statutory liability for the nuclear loss event, which is solely borne by the owner. However, there can be contractual liability in the internal relationship between the owner of the nuclear power plant (as client) and the company doing the dismantling work (as contractor). The basis for this is the contract between the owner and the contractor. Contractual recourse claims by the owner, who is subject to statutory liability regarding third parties, against his contractor – if the contractor is at fault – come to mind, for example.

Recourse claims of this kind can be very large, which is why an effective limitation of liability is essential from the viewpoint of the participating companies. German law imposes very strict requirements on an effective limitation of liability. To avoid unnecessary risks in this area, provisions on liability should be formulated very carefully and their negotiation should be documented just as carefully.

Be sure to pay attention to special features of transporting nuclear material!

Nuclear material – eventually including nuclear fuel -- must be transported away from the site when nuclear power plants are shut down and dismantled. Unusual features of liability law also apply to transporting nuclear material.

Under certain conditions, the concentrated liability for losses due to nuclear incidents can be transferred to the carrier. This is subject to agreement among the plant owner, the permitting authority, and the carrier.

The assumption of liability risk can be an additional service and also a business opportunity, but it must be carefully prepared for and receive appropriate legal protection.

General interface risks

Dismantling a nuclear power plant requires the cooperation of many experts, some of them highly specialized. The coordination of those trades – as is the case for any plant construction project – involves many interfaces. Each of those interfaces must be clearly set forth in the set of agreements in order to avoid delays and further problems in completion of the dismantling project.

The complex permitting process described above is also relevant to this. For example, if a permitting

authority requires specific information or documents at a certain time, the responsibility for preparing them must be consistently specified throughout the set of agreements. The participation of specialized companies as subcontractors during the project is often necessary.

If there are delays because of contradictory or imprecise passages relating to responsibility for regulatory approvals, including in the general and subcontractor agreement, this can quickly lead to considerable liability risks. To avoid those risks, the obligations in the general and subcontractor agreement must be carefully coordinated with each other ("back-to-back").

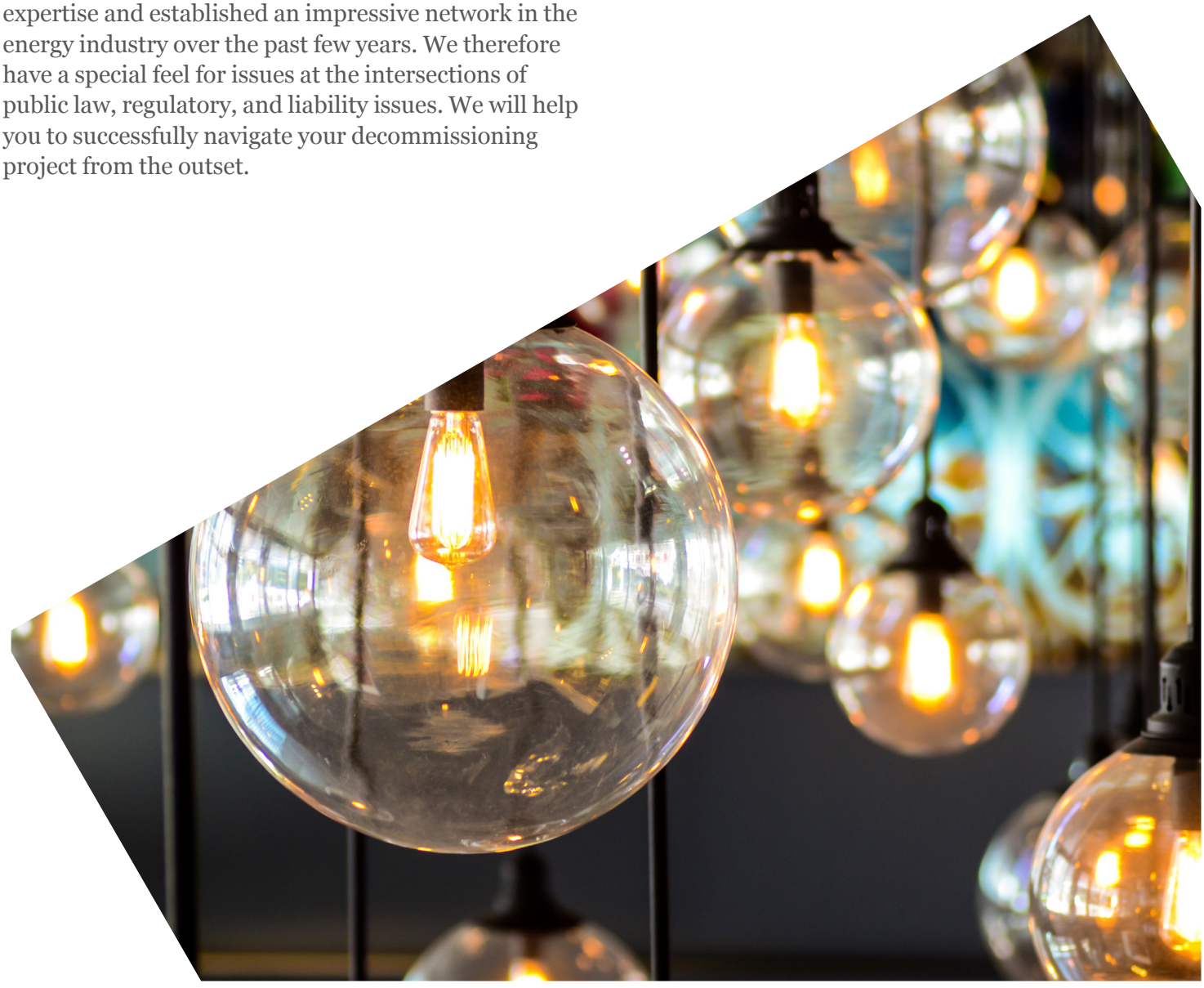
Finger on the pulse – shaping Germany's energy transformation

Our service and our experience

The enormous challenge facing the public and private sectors when decommissioning and dismantling uclear power plants is very complex in both legal and technical terms. Continuous changes in legislation and procedures strongly influence planning during the run- up to projects of this kind. In that regard, risks must be anticipated and projects must be navigated proactively. Our team has its finger on the pulse of these trends and is very familiar with current procedures at all levels. Our services run the gamut of advice on issues related to specific types of energy and plants which play a role in the decommissioning and dismantling of nuclear power plants. The team has gained outstanding sectoral expertise and established an impressive network in the energy industry over the past few years. We therefore have a special feel for issues at the intersections of public law, regulatory, and liability issues. We will help you to successfully navigate your decommissioning project from the outset.

Advisory services emphasize

- Corporate acquisitions and sales, including legal due diligence
- Support and control of M&A processes (such as bidding procedures)
- Developing, revising, and negotiating all necessary agreements, particular SPAs in connection with transactions
- Restructuring measures before, during, and after entry into transactions
- Founding joint venture companies
- Regulatory implications and aspects related to competition law



Our experience with decommissioning and dismantling nuclear power plants

Selected sectorial expertise (1)

A large international energy company

Advice on a dispute with Hochtief concerning defective construction work in a nuclear power plant and the resulting closure of the plant for one year

A bidder

Advice during proceedings related to the decommissioning of a nuclear waste disposal site at Sellafield in Cumbria (United Kingdom)

Various suppliers of components for nuclear plants

Advice during the review of nuclear liability provisions when selling plant components to a nuclear power plant operator

An international EPC contractor

Advice on questions by shareholders following an agreement to close a nuclear power plant in the United Kingdom

Internationally active energy company headquartered in France

Advice in connection with regulatory issues concerning German nuclear laws

The British government

Advice during the planned acquisition of a company from the nuclear power plant decommissioning sector and when entering into an agreement on closing a nuclear power plant and managing radioactive waste

An American company

Advice in connection with provisions on nuclear liability under the Multilateral Nuclear Environmental Programme in the Russian Federation (MNEPR) concerning the decommissioning of nuclear power plants and nuclear submarines

UK Atomic Energy Authority (UKAEA)

Advice related to the development of the Harwell Science and Innovation Campus as part of the complete shutdown of the Harwell nuclear site

Selected sectorial expertise (2)

Various licensees/operators

Advice on funding assurance for decommissioning of nuclear power plants, including the financial instruments and trust agreement on nuclear decommissioning

An international energy provider and power plant operator

Ongoing advisory services related to nuclear law and regulation, including requirements for nuclear decommissioning methods (ranging from prompt dismantlement to safe storage), spent fuel management, and environmental remediation of the site

Participants in decommissioning projects

Advice on issues related to the disposal of low-level radioactive waste and the dry-cask storage of spent fuel as part of British and American decommissioning projects. Advice has included application of decommissioning standards for remediation

Various large energy companies, municipal utilities, and project developers

Advisory services related to the construction and dismantling of power plants

Multiple plant builders in the nuclear sector

Advice on liability issues under the German Nuclear Power Act and the Paris Convention in Germany and other countries

Various nuclear clients

Advice on issues associated with “stewardship” projects for decommissioning in which the decommissioning contractor becomes the site licensee

Electricity company

Assisting in relation to certain aspects (environmental/nuclear regulatory) of the due diligence phase relating to the acquisition of a subsidiary of a large French nuclear group

Bank

Advising on regulatory issues in connection with civil nuclear liability

Large French nuclear group

Advising on regulatory and environmental issues (French Transparency and Nuclear Safety Law (TSN), waste, nomenclature of classified installations for the protection of the environment (“ICPE”), etc.)

Large French nuclear group

Assisting in criminal proceedings concerning the consequences of past uranium mining activities in Limousin

Subsidiary of a large French nuclear group

Assisting a subsidiary of a large French nuclear group, which carries out a support activity in connection with uranium enrichment, in relation to criminal proceedings concerning the discharge of effluent containing uranium into a river and in compliance with the regulations for reporting the incident

Your personal contacts

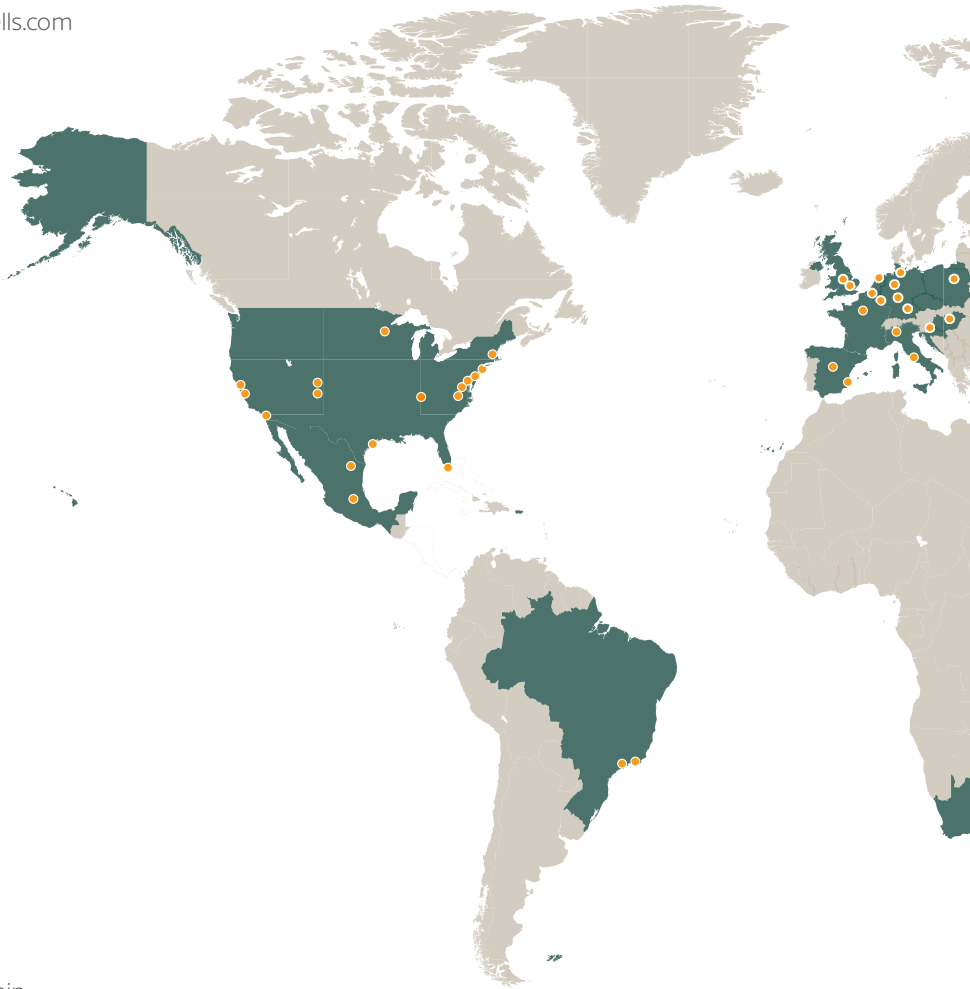
Prof. Dr. Thomas Duenchheim
Government Regulatory
Office Managing Partner, Dusseldorf
T +49 211 1368 329
thomas.duenchheim@hoganlovells.com

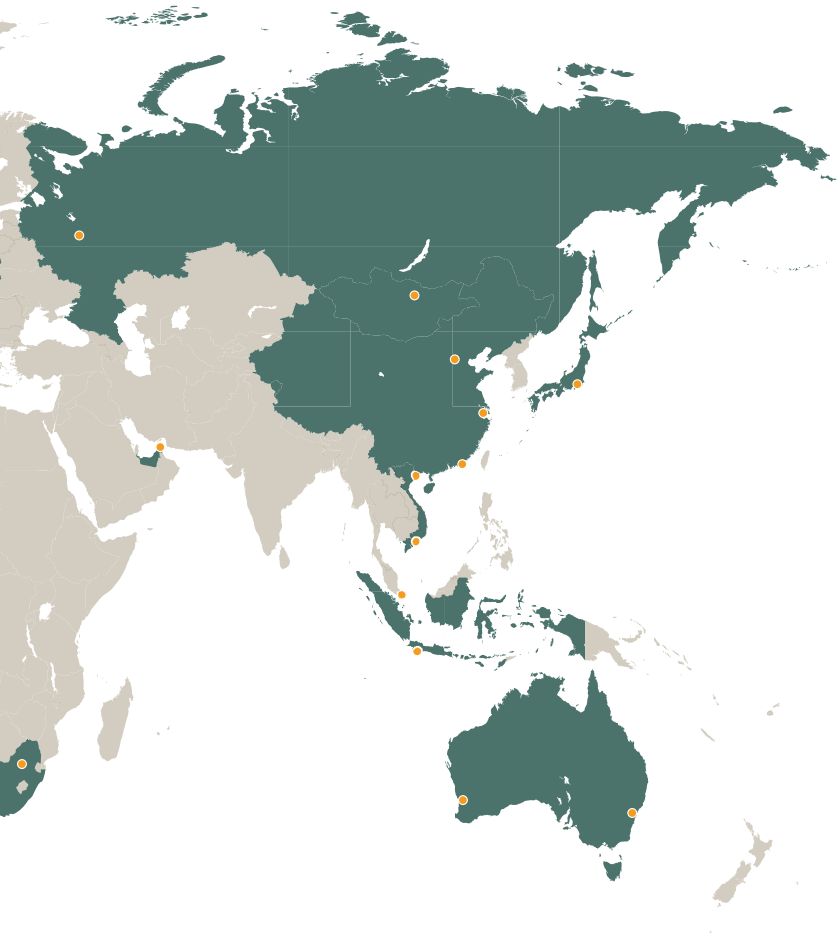
Dr. Tobias Faber
Infrastructure, Energy,
Resources and Projects
Partner, Frankfurt am Main
T +49 69 96236 161
tobias.faber@hoganlovells.com

Ulrich Helm
Infrastructure, Energy,
Resources and Projects
Partner, Frankfurt am Main
T +49 69 96236 222
ulrich.helm@hoganlovells.com

Daniel F. Stenger
Partner, Washington D.C.
T +1 202 637 5691
daniel.stenger@hoganlovells.com

Philipp Weihrauch
Infrastructure, Energy,
Resources and Projects
Senior Associate, Frankfurt am Main
T +49 69 96236 161
philipp.weihrauch@hoganlovells.com





Matthias Hirschmann, LL.M. (LSE)
Corporate Law
Partner, Hamburg
T +49 40 41993 285
matthias.hirschmann@hoganlovells.com

Dr. Franz-Josef Schoene
Corporate Law
Partner, Dusseldorf
T +49 211 1368 401
franz-josef.schoene@hoganlovells.com

Bernhard Kuhn
Real Estate
Partner, Frankfurt am Main
T +49 69 96236 300
bernhard.kuhn@hoganlovells.com

Laure Nguyen
Counsel, Paris
T +33 1 5367 4790
laure.nguyen@hoganlovells.com

Sebastian Graeler
Government Regulatory
Associate, Dusseldorf
T +49 211 1368 329
sebastian.graeler@hoganlovells.com

Notes

Alicante
Amsterdam
Baltimore
Beijing
Birmingham
Boston
Brussels
Budapest
Caracas
Colorado Springs
Denver
Dubai
Dusseldorf
Frankfurt
Hamburg
Hanoi
Ho Chi Minh City
Hong Kong
Houston
Jakarta
Johannesburg
London
Los Angeles
Louisville
Luxembourg
Madrid
Mexico City
Miami
Milan
Minneapolis
Monterrey
Moscow
Munich
New York
Northern Virginia
Paris
Perth
Philadelphia
Rio de Janeiro
Rome
San Francisco
São Paulo
Shanghai
Shanghai FTZ
Silicon Valley
Singapore
Sydney
Tokyo
Ulaanbaatar
Warsaw
Washington, D.C.
Zagreb

Our offices
Associated offices

www.hoganlovells.com

"Hogan Lovells" or the "firm" is an international legal practice that includes Hogan Lovells International LLP, Hogan Lovells US LLP and their affiliated businesses.

The word "partner" is used to describe a partner or member of Hogan Lovells International LLP, Hogan Lovells US LLP or any of their affiliated entities or any employee or consultant with equivalent standing. Certain individuals, who are designated as partners, but who are not members of Hogan Lovells International LLP, do not hold qualifications equivalent to members.

For more information about Hogan Lovells, the partners and their qualifications, see www. hoganlovells.com.

Where case studies are included, results achieved do not guarantee similar outcomes for other clients. Attorney advertising. Images of people may feature current or former lawyers and employees at Hogan Lovells or models not connected with the firm.

© Hogan Lovells 2018. All rights reserved. 11677_EUg_0418