



Deliverable 2.1

Report on the State of the Art of Regulation and Legislation and Gap Analysis



ABOUT READY4DC

The future electricity network envisioned by READY4DC will be characterized by a growing role of multi-terminal multi-vendor (MTMV) HVDC solutions within the current AC transmission networks both onshore and offshore. READY4DC is contributing to this synergistic process by enabling commonly agreed definitions of interoperable modelling tools, model sharing platforms, clear processes for ensuring interoperability, and an appropriate legal and political framework.



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Report on the State of the Art of Regulation and Legislation and Gap Analysis

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EXECUTIVE SUMMARY

Next to electrical and system engineering, it is important to consider the legal and regulatory perspective in innovation processes such as the road towards multi-terminal, multi-vendor HVDC systems. This deliverable analyses the status quo of legislation and regulation, and shows which gaps have been identified within READY₄DC WG2 as barriers to the development of multi-vendor, multi-terminal HVDC grids.

A multi-vendor, multi-terminal HVDC requires coordination and governance, standards and protection of IP – issues that are regulated by law. A stable and enabling legal framework forms an essential basis for investment in HVDC technology.

This deliverable has been developed by a combination of doctrinal legal research and regular (in principle bi-weekly) Working Group meetings in which intermediate results were shared and discussed. The resulting paper is organised according to various main themes identified in the working group, that are then further specified. Each section ends with the legislative gaps that have been identified regarding that theme.

A short overview of the results, the identified gaps per theme, is provided below. On the basis of these identified gaps, we conclude that there are still several issues that need to be addressed in the legal framework in order to develop a multi-vendor, multi-terminal HVDC network in a cost-effective way. A limitation of this study is that the results have only been reviewed by the members of the Working Group and that the focus is solely on identifying the barriers, rather than analysing how they could be addressed. Therefore, as a next step, the next Deliverable (Q2 2023) will take the form of a whitepaper with recommendations on how to address the identified gaps. Moreover, in order to test whether a broader group of stakeholders agrees to the identified barriers and solutions, there will be a stakeholder consultation event. The feedback from stakeholders will be incorporated, after which a Final Whitepaper will be produced (Q3 2023).

IDENTIFIED GAPS AND BARRIERS:

GOVERNANCE

- Coordination now takes place on a bilateral basis between vendor and TSO/developer, whereas coordination within a larger structure is necessary to reach interoperability between different sub-systems/vendors and across multiple TSOs/developers. There is no legal basis for such a larger structure yet.
- As the roles and responsibilities of the different parties in a multi-vendor situation are not entirely clear yet, customers are locked in single vendor systems, even though multi-vendor systems would lead to several benefits in terms of easy extendibility.

COOPERATION BETWEEN UNDERTAKINGS

- No ex-ante certainty that cooperation by a large group of undertakings (covering a large market share) is allowed by the EC

- The safe harbours (market shares for when Block Exemption Regulations are valid) are relatively low, whereas it would be best if a large percentage of the market participates in the standardisation
- The distinction between R&D and specialization agreements is not entirely clear. The instruments do not provide clarity on consequences of overlap.
- Fixing of prices is possible in certain limited instances. However, the rules on the fixing of prices are not entirely clear in practice.

STANDARDISATION

- There are limited concrete ex ante rules and procedures on open and transparent participation in standardisation that industry participants can follow, necessitating – to a large extent – the development and monitoring of such rules and procedures by undertakings themselves.
- There are no concrete ex ante rules and procedures dictating when exclusion of undertakings from standardisation is justified nor how the allocation of the voting rights within the standardisation process should take place.
- The law determines in general terms that FRAND licensing terms require binding commitments from participating undertakings. It largely fails to align these commitments with the need to foster broad industry participation, requiring companies to align these tensions themselves.
- The regulation requires a good faith effort on the part of undertakings to disclose relevant IPR. The scope and duration of that good faith effort, however, are not specified.

THE STANDARD-ESSENTIAL PATENT

- The Commission prefers one set of Standard Essential patents per specification. It does not address standards where multiple patented solutions exist, which can all perform the specified function equally well
- The Commission's preference for one set of technology – and therefore one set of patents – leaves unaddressed the possibility of non-essential but complementary technology.
- The Guidelines on the applicability of Article 101 do not mention commercial factors in determining essential patents. The Guidelines on technology transfer do, and specifically mention standards. It is unclear if and to what extent commercial factors can influence the essentiality of patents.
- The Commission's guidelines related to standardisation and essentiality are at times contradictory. This results in a lack of clarity regarding, for instance, the essential and complementary nature of the Standard Essential Patent.

FRAND AND PRICING OF PATENTS

- There are multiple methods available to determine excessive pricing. It is unclear when each method will be used and in what combination.
- Informational and comparability issues leave companies with a lot of freedom to determine appropriate licensing fees. The lack of clarity on when exactly licensing fees are excessive leaves unclear where that freedom ends.
- Recent attempts to reduce strategic value from licensing fees may cause future issues, if the commercial practice of participating companies does include strategic value. It is unclear to what extent that is likely to occur.

STATIC OR DYNAMIC STANDARDS

- The extent to which interoperability and general efficiency, gained by continuously integrating innovative technology into the standard, reduce competition law risk.
- The status of innovative technology as essential to an already developed or nearly completed standard.

- The grounds under which innovative technology, at a later date, may or must be integrated into a standard
- The appropriate licensing regime pertaining to dynamic standards.

TECHNOLOGY/IP NEUTRAL SPECIFICATIONS

- It is unclear to what extent competition law has relevance for IP neutral specifications in standards, even if it may be technically desirable.
- Technology neutral specifications may allow for the utilization of trade secrets. The regulation leaves unclear to what extent that possibility is positive or negative from a competition law perspective.

BILATERAL LICENSING OR LICENSING POOLS

- It is unclear ex ante which licensing form would be most appropriate for a particular standard
- There is a general lack of clarity between favourability of bilateral licenses and technology pools
- There is a general lack of clarity pertaining to issues of overlap between technology pool licensing and its usage in standardisation.
- It is not clear to what extent the possibility of increased coordination influences the legal risk pertaining to technology pools.
- It is unclear to what extent a possible reduction in transaction costs with technology pools influences the legal risk pertaining to technology pools.

TRADE SECRETS IN TECHNICAL STANDARDS

- To what extent does competition allow licensing arrangements to depend on trade secrets, which are not integrated into a standard
- To what extent do the practical requirements of non-disclosure agreements coincide with the requirement of FRAND licensing terms?
- Trade secrets are not part of a standard. Does competition law allow the standardisation process and the selection of specifications to be influenced by trade secrets?

LIABILITY

- To define and allocate liabilities and warranties, risk allocation and system responsibilities need to be defined for different project scenarios, i.e. distributed multi-terminal multi-vendor HVDC systems and interconnected turnkey HVDC system, for all relevant project phases.
- Procurement schemes and tendering procedures suited for the multi-terminal multi-vendor projects owned and tendered by different entities need to be developed.
- Principles determining liability and warranty assignment in the event of malfunctioning and interoperability issues must be derived. These must be compatible with technical methods for detecting and assigning such issues.

EU NETWORK CODES

- The EU Network Codes are not fit for multi-terminal, multi-vendor networks. They need to be amended in time.

1. INTRODUCTION

A multi-vendor, multi-terminal HVDC requires coordination and governance, standards and protection of IP – issues that are regulated by law. A stable and enabling legal framework forms an essential basis for investment in HVDC technology. This Deliverable describes the main legal framework on several topics relevant for an interoperable HVDC network. First, it covers the cooperation required between different actors, namely Governance and Cooperation between Undertakings (in light of competition law). Then, the Deliverable covers the legal framework on standardisation, patents and licenses. There is an interdependence between these topics, for example because an industry standard may rely on many licenses and patents. The next important issue in the legal framework is the division of risks and liability between different companies. When too much risk is concentrated within one company, this will make that company reluctant to invest. A final issue in the legal framework is the EU Network Codes, which are currently not adapted to multi-terminal HVDC systems.

For each topic, the legislative status quo is shortly explained and the legislative gaps or questions are identified. This deliverable does not aim to solve all identified issues. Instead, these will be the topics of ongoing work within READY₄DC WG2. The next Deliverable (Q2 2023) will take the form of a whitepaper with recommendations on how to address the identified gaps. After stakeholder consultation, this will be finalised in a final Whitepaper (Q3 2023).

2. GOVERNANCE

Governance is a wide concept. In this context, it entails the process of governing the roll-out of multi-terminal, multi-vendor HVDC grids. Governance does not lie with one actor, but instead is process in which many different actors play a role. A crucial element in governance is the division of roles and responsibilities between these different actors. This is partially laid down in legislation: for example, TSOs have to adhere to certain rules and responsibilities when they procure a new system. However, there are many steps in the development of an HVDC system, and regarding the shift from single vendor to multi-vendor systems, not all steps have a clear division of roles and responsibilities. Therefore, parties can keep waiting for each other, leading to unnecessary delays. Moreover, if the division of responsibilities (and the liability stemming from responsibility) lies too much towards one party, this may also reduce the willingness to invest in HVDC systems.

The issue of governance is not limited to WG2, as it is a central theme of READY₄DC. The gaps identified with regard to governance are not necessarily legal by nature, but legislation and regulation is one of the ways to clarify the roles and responsibilities of different actors and to increase certainty for all.

Issues that have been identified so far:

- Coordination now takes place on a bilateral basis between vendor and TSO/developer, whereas coordination within a larger structure is necessary to reach interoperability between different sub-systems/vendors and across multiple TSOs/developers. There is no legal basis for such a larger HVDC structure yet.
- As the roles and responsibilities of the different parties in a multi-vendor situation are not entirely clear yet, customers are locked in single vendor systems, even though multi-vendor systems would lead to several benefits in terms of easy extendibility.

3. COOPERATION BETWEEN UNDERTAKINGS

Multi-terminal, multi-vendor HVDC systems require interoperability. Interoperability requires a degree of coordination between different actors. Coordination between different vendors (horizontal cooperation) and coordination between vendors and project developers (vertical cooperation) is regulated in EU competition law, via specific legislation and via the general rule of article 101 of the Treaty on the Functioning of the European Union (TFEU). Certain forms of cooperation are prohibited per se, others are allowed as long as certain thresholds are met. This section discusses the margins within cooperation can take place and where more certainty is required.

3.1 The Degrees of Certainty within EU Competition Law

The required interoperability in multi-vendor HVDC systems necessitates cooperation. However, as mentioned above, cooperation between undertakings is regulated by EU competition law. Vendors and TSOs wish to cooperate as long as this is allowed under EU competition law. Therefore, it is important that they have a degree of certainty about whether the envisaged form of cooperation is allowed, for example to make sure that in the end, vendors are allowed to bid in the commercial tender for a HVDC system. EU competition law knows various degree of certainty about whether a form of cooperation is allowed. They will be discussed below.

3.1.1 General Rule

First, the general rule on cooperation between undertakings is 101 TFEU. The article prohibits "(...) all agreements between undertakings, decisions by associations of undertakings and concerted practices which may affect trade between Member States and which have as their object or effect the prevention, restriction or distortion of competition (...)". This general rule is further substantiated in case law of the European Court of Justice (ECJ) and guidelines from the European Commission.

Based on the existing legislation and application in practice, the following options are possible:

AGREEMENT DOESN'T AFFECT COMPETITION

If an agreement or form of cooperation does not affect competition, there is no violation of competition law. However, it is risky to trust on this option if there may still be an effect on competition. With the cooperation needed for interoperability, it is likely that the agreements needed for this affect competition.

SAFE HARBOUR

When the combined market shares of the undertakings cooperating in a certain market are relatively low, an agreement is unlikely to restrict competition. Thus, agreements below this threshold are in a "Safe Harbour". The percentage of market share considered a safe harbour differs per type of cooperation, so for commercialisation agreements, it is only 15%, whereas for R&D agreements it is 25%. However, the agreements required to achieve interoperability should aim for cooperation with a sufficiently high percentage of the market – especially where the ultimate goal is standardisation. Therefore, it is unlikely that the safe harbour percentages will be met. It must be noted that agreements that are anticompetitive by nature (such as hardcore cartels) are not allowed, even if they are below a certain market share.

EFFICIENCY GAINS: 101(3) TFEU

If a form of cooperation covers a large percentage of the market, and it restricts competition, it can still be allowed when it leads to efficiency gains. An individual exemption is possible if the following four (cumulative!) criteria are met:

1. Contribution to improving the production or distribution of goods or to promoting technical or economic progress
2. a fair share of the resulting benefit the consumers
3. The restriction of competition must be indispensable to the attainment of the objectives in the first criterion.
4. Not eliminate competition in respect of a substantial part of the products in question

The case law of the ECJ contains few references to this article, leaving much room for the Commission to interpret these rules. In order to clarify when these rules are applicable in different situations, the European Commission has drafted Guidelines and Block Exemption Regulations. These will be discussed below.

3.1.2 Shift of the Burden of Proof

If the Commission or other competition authorities is of the opinion that a particular standard violates EU competition law, then they will have the burden of proof. However, if undertakings wish to defend their cooperation based on the fact that it leads to efficiency gains, the burden of proof shifts to the undertakings. This threshold concerns art. 101 (3) TFEU and allows a company that violates section 1 of art. 101 TFEU to justify that.

In the Guidelines, the relevant burden of proof for proving either a violation or justification of EU competition law is consequently left unclear. If a company finds itself at exceeding the threshold of art. 101 (1) TFEU, the burden of proof will shift and the standard of proof will rise. A company will then also have to prove the other three criteria of art. 101 (3) TFEU, which are not found in any of the other thresholds. The Commissions soft law therefore lacks clarity when determining whether a standard is in compliance with competition law.

3.1.3 Block Exemption Regulations

A high degree of certainty about whether a form of cooperation is allowed can be obtained when the cooperation falls under one of the so-called "Block Exemption Regulations". There are three block exemptions within the scope of competition law and IP licensing that are relevant for the cooperation necessary to achieve an interoperable multi-vendor HVDC system. These are related to R&D agreements, specialization agreements and technology transfer agreements:

- Regulation No 1217/2010 of 14 December 2010 on the application of Article 101(3) of the Treaty on the functioning of the European Union to categories of research and development agreements
- Regulation No 1218/2010 of 14 December 2010 on the application of Article 101(3) of the Treaty to categories of specialisation agreements.
- Regulation No 316/2014 of 21 March 2014 on the application of Article 101(3) of the Treaty on the Functioning of the European Union to categories of technology transfer agreements

Please note: these Regulations are under revision and will presumably be changed per January 2023. There are no large changes envisaged based on the draft new versions, but this section will be updated where necessary after the adoption of the new Regulations.

If any activities are caught within the scope of these Regulations, that activity cannot be considered a violation of any substantive obligation under EU competition law.

3.1.4 R&D Agreements

Regulation 1217/2010 concerns research and development agreements. A research and development agreement constitutes an agreement by two or more parties, wherein those parties pursue:

1. Joint research and development of technology or new products and joint exploitation of those results;
2. Joint research and development of technology or new products, excluding joint exploitation of those results;
3. Paid-for research and development of technology or products pursuant a prior agreement between the parties and the joint exploitation of those results;
4. Paid-for research and development of technology or products, without joint exploitation of those results.

Article 2 of Regulation 1217/2010 exempts these activities, as well as licensing that is directly related and necessary for the implementation of these research agreements from the scope of art. 101 (1) TFEU through usage of art. 101 (3).

Article 3 Regulation 1217/2010 provides the conditions necessary for such an exemption.

- All parties must be granted the results of the research for further research, as soon as these results become available.
- All parties must furthermore be granted access to the know-how necessary for the effective exploitation of the technology or product, if that know-how is indispensable for effective exploitation.
- Compensation for such a transfer is allowed, but it must not be so high as to effectively impede access.
- Joint exploitation of the results may only pertain to the results of the agreement that are protected by IP or constitute know how essential for the manufacture or application of the researched technology.
- The distinction between merely cooperative research and cooperative research with joint exploitation is relevant, as the Commission states in its guidelines. Should a company exceed the to-be-discussed market share threshold the exemption no longer applies. But the Commission's assessment under art. 101 (1 & 3) does treat mere cooperative research with more leniency.

As the Regulation makes clear, research and development agreements require parties to jointly develop relevant technology. The joint exploitation of technology that, essentially, already exists, is not covered. It is unclear when this Regulation considers something novel enough to warrant classifying it as a new technology deserving of exemption. This is one of the topics that will be amended in the new version, based on the draft proposal.

Article 4 of Regulation 1217/2010 furthermore restricts the application of the exemption via a market threshold test. Companies are only exempt from EU competition law if the combined market share of all

competing parties in the agreement does not exceed 25%. This can be measured from both the relevant technology market and the relevant product market where that technology will be used. If any market share is higher than that, at any point in during the research of seven years after the first exploitation, the exemption of Regulation 1217/2010 no longer applies.

The regulation also contains a list of “hardcore” restrictions, which cannot in any event be exempt under Regulation 1217/2010. Some of these are rather obvious, such as: no splitting up of the relevant market territory for each company and, generally, no artificial restriction of output. Somewhat more difficult in the context of standardisation is the fixing of prices. While traditionally price fixing is never allowed in EU competition law, Regulation 1217/2010 does allow it when that is the result of licensing fees charged to immediate licensees, which they then in turn incorporate into their prices. It is unclear from the wording of the Regulation when such licensing fees overstep their boundaries, either due to not being immediate enough or where the licensing prices become too high. The Regulation furthermore forbids a restriction imposed on the parties to carry out R&D on fields unrelated to the original agreement, or in that field after the agreement has ended. How the Commission determines what those unrelated fields are is also not apparent from the text of the Regulation. It will in any event limit the parties’ ability to restrict any other party from using any of the knowledge gained, even if a company seeks to safeguard highly sensitive know-how or trade secrets.

3.1.5 Specialisation Agreements

Regulation 1218/2010 provides an exemption from art. 101 TFEU to certain specialisation agreements. Specialisation agreements may refer to unilateral agreements, reciprocal agreements or joint production agreements. These agreements have as their purpose allowing one company to further gain specialisation, which results in better products. With unilateral agreements a company will agree to limit its production of certain products, instead purchasing those products from the other contracted party who is active on that same product market. Reciprocal agreements refer to two or more parties, active on the same product markets, jointly agreeing to cease or limit production of certain products, which they will then procure from the other party. By limiting the production of certain products, participating companies can focus on certain production processes and achieve greater efficiency as a result. Finally, a joint production agreement refers to an agreement by two or more parties where all parties jointly produce certain products. Unlike with R&D agreements, this block exemption does not facilitate the development of entirely new technology. Rather, it aims to facilitate improved production of already existing products.

It is unclear where the threshold of improved production of existing products ends and the researching of new products begins. Production agreements may, for instance, facilitate improved joint production of existing products and the joint development of future products. The threshold is important to know, because the hardcore restrictions from the R&D agreements may then become relevant for (parts of) the joint production agreement. It is furthermore relevant to know for the maximum market share of all parties, which is not necessarily equal. Finally, the distinction is important to know for the applicability of both exemption regulations. The specialisation exemption regulation can only be applicable to two directly competing companies. Companies that merely occupy the same supply chain cannot use Regulation 1218/2010. But R&D agreements can be applicable in both contexts. Regulation 1218/2010, Regulation 1217/2010 and the Guidelines on the applicability of Article 101 provide little clarity on the possibility and consequences of overlap.

As mentioned, Regulation 1218/2010 is only applicable to agreements between competing companies, where the total share of the relevant market does not exceed 20%. Depending on the structure of the market, it can be quite easy for companies to exceed that threshold. As such, the Regulation will only have worth for smaller companies, or in markets populated by smaller companies.

Regulation 1218/2010 also contains hardcore restrictions which a company may never commit, though there are less than in Regulation 1217/2010. The only restriction that lacks clarity concerns the fixing of prices in specialisation agreements. In principle, fixing prices is an action that has as its object the restriction of competition and is therefore never allowed. The difficulty in this restriction for specialisation agreements lies in the possible exemption to that in Regulation 1218/2010. Fixing prices is allowed, if these prices are charged to immediate customers in the context of joint distribution. Neither the Regulation nor the guidelines on the applicability of Article 101 provide much clarity on what constitutes an immediate customer. Joint distribution must furthermore be necessary to jointly produce a product, which the Commission clarifies in its guidelines as: "parties would not otherwise have an incentive to enter into the production agreement in the first place". It is not clear from the wording of Regulation 1218/2010 and the Guidelines on the applicability of Article 101 when such an incentive exists or how a company should assess that incentive. As these restrictions lack clarity, it would be safest for a company to not engage in price fixing at all, as failing to meet these vague criteria will result in conduct that violates the core of EU competition law. Undertakings lack the clarity necessary to make full use of price-setting in specialisation agreements.

3.1.6 Technology Transfer Agreements

Regulation 316/2014 provides an exemption pursuant to certain technology transfer agreements.

Technology rights may refer to copyright for software or patents, but does not include any definition of trade secrets or otherwise valuable know-how. Technology transfer agreements refer to agreements whereby two undertakings:

1. Enter into a technology licensing agreement for the purpose of allowing the licensee to produce products;
2. Assign technology rights between each other for the purpose of producing products, where the risk associated remains in with the assignor of the technology, at least in some respect.

These agreements may be reciprocal, whereby both undertakings grant the other the usage of technology rights which compete with one another. They may also be non-reciprocal, whereby the assigned or licensed technology rights are not competing with one another. The definition used in Regulation 316/2014 makes it clear that the Regulation only aims to grant exemptions to conduct where the licensee produces the product or the production of a product where the assigner retains some manner of risk regarding the exploitation of the technology. This may include agreements where the licensing or transfer fee is dependent on the profitability of the produced product. Strictly speaking, the Regulation only covers agreements where a product is produced, not developed. The Guidelines accompanying this Regulation do stress that some preliminary development may be accepted. That same guideline also makes clear that developing new products cannot be covered by Regulation 316/2014. Though the exact boundary between mere preliminary development and new development is unclear, it seems likely the Regulation favours a somewhat strict interpretation of preliminary development. Regulation 316/2014 therefore retains little use for development agreements. Regulations 1217/2010 and 1218/2010 are meant for such development agreements.

The regulation is furthermore limited, by only allowing agreements between two undertakings. Multilateral frameworks are not covered by this Regulation 316/2014.

The market share of the relevant undertakings is another important restriction on technology transfer agreements. Competing undertakings must not exceed a combined market share of 20%. For non-competing companies this market share threshold is 30 % for each individual company. The limited market threshold restricts competing undertakings significantly more than non-competing undertakings. Regulation 316/2014 may therefore be the most useful for non-competing undertakings. The 30% share of the market, though, could still restrict the scope of Regulation 316/2014, particularly where it concerns TSO's.

3.2 Legislative Gaps

In this section, the state of the art of legislation and regulation concerning the cooperation of undertakings, indispensable for interoperability, is laid down. The following gaps have been identified:

- No ex-ante certainty that cooperation by a large group of undertakings (covering a large market share) is allowed by the EC
- The safe harbours (market shares for when Block Exemption Regulations are valid) are relatively low, whereas it would be best if a large percentage of the market participates in the standardisation
- The distinction between R&D and specialization agreements is not entirely clear. The instruments do not provide clarity on consequences of overlap.
- Fixing of prices is possible in certain limited instances. However, the rules on the fixing of prices are not entirely clear in practice.

4. STANDARDISATION

Interoperability in HVDC systems and HVDC grids asks for a certain degree of standardisation. Standardisation is a process that can take different forms, and the legislation on standardisation depends on the way the process is organised. The process of standardisation requires undertakings to engage in agreements with each other, which makes the rules on competition law also relevant for this topic. Therefore, the way standardisation can take place is determined in part by the rules set by the European Commission.

4.1 Participation in Standardisation

An important topic throughout the standardisation process concerns the necessary rules to properly facilitate participation by a variety of industry actors. Standardisation can occur in, essentially, two variants. It may occur within specified bodies of EU or national law, in which case the participation process is governed by that body of law's rules and procedures. It can also occur, with several possible configurations, by private actors. As there is in principle no prohibition on standardisation by industry there are also no rules private actors must necessarily adhere to.

4.2 Open and Transparent

EU Competition Law, particularly the soft law of the EU commission, limits the freedom private actors have to standardize. Standardisation is defined as the voluntary technical or quality specifications with which current or future products, processes or services may comply. This is a broad definition capable of encompassing a variety of industry cooperation and industry agreements. While the Commission generally stresses that the efficiency improvements standards can provide are significant, it remains wary of standards and the standardisation process as covers for other, undesirable forms of cooperation. In the early stages of standardisation that may be of little concern, but the greater the market share of a particular standard becomes, the greater these concerns become. The standard setting process should therefore be as open and transparent as possible. Of particular relevance is the requirement to ensure that all relevant parties can participate in the formation and selection of the standard. This includes all entities within a given market that are competitors or are otherwise affected by the standard.

4.3 Voting Rights

The voting rights granted to each participant in the standardisation should be objective, non-discriminatory, and contain objective criteria for selecting technology or specifications. If not done appropriately, a few undertakings could gain significantly more influence than would ordinarily be justified. The criteria used by the Commission are general in nature and are not further elaborated upon. The relevant undertakings must therefore decide upon these rules themselves. The Commission only clarifies that possible exclusions could be justified, if:

1. The would-be participant demonstrates or is likely to demonstrate significant inefficiencies (i.e. technical or organizational).
2. The standardisation process already sufficiently covers the collective interest of that particular would-be participant.

Regarding the first exemption, it is relevant that such a determination is made through usage of objective criteria, with preferably an independent body making the final decision. The wording of the Commission does not allow for a clear separation between “mere” inefficiencies, and inefficiencies that are of such significance that they warrant exclusion from the standardisation process.

The last exemption can be used to avoid unnecessary organisational difficulties. Unfortunately, the Commission does not adequately explain when the collective interest is already sufficiently covered, or when mere inconvenience evolves into organisational difficulties.

4.4 Participation, Technology and IP

As previously mentioned, standardisation allows for efficiency gains within the market that is standardized. For the greatest possible efficiency gains to occur, it is necessary that the standardisation process has broad industry participation. Through this broad base of industry support the best available technology can influence the chosen specification and be integrated into the standard at an early stage. This aligns with the Commissions stance on open and transparent participation in the standard-setting process. Any rules, regulations, or organizational decisions should therefore facilitate broad participation.

The need for broad participation is counter-balanced by the related need to acquire a binding licensing commitment from participating companies. Any technology that participating companies possess that is

useful for a standard nearly always has intellectual property rights (IPR) attached to them. It is therefore in the interest of the standard that these companies provide irrevocable licensing commitment under fair, reasonable and non-discriminatory terms (also known as: FRAND terms). That way a standard can develop specifications according to the relevant technology, with the knowledge that the standard will not be hindered by companies invoking their IPR. This is also a required by the Commission: without it, a standard cannot make use of the “safe harbour” found with the Commissions Guidelines on the applicability of Article 101 of the Treaty on the Functioning of the European Union to horizontal co-operation agreements.

Such a binding licensing commitment, however, has the potential of reducing participation by companies, depending on the terms of the licensing commitment. Unclear or early binding commitments may otherwise force companies to license IPR, without them being entirely aware of the IPR that they possess and the value that this IPR could have in the future. The ECJ’s case law dictates that, once a binding commitment has been made by companies to license their IP for use in a standard, competition law significantly restricts their freedom to licensing their IP. The goal of open and transparent participation and the need for binding licensing commitments therefore cause tension within the standardisation process. If the timing of the binding commitment is early, participation by companies may be hindered. If the binding commitment is required late into the standardisation process, this may delay the development of the specification. The standard-setting process should therefore find an appropriate balance between transparent participation, fostering broad industry participation, and securing relevant IP licenses.

4.5 Good Faith

An issue associated with broad industry participation concerns the obligation of participating companies to disclose which IP they possess. It is necessary for the standardisation process that all relevant IPR is disclosed ahead of time. If a specification has been set without knowledge of existing IPR, that could hinder the effective development of the standard or force other companies to pay a large licensing fee for the usage of that technology. For the benefit of a standard, companies are required to disclose what IPR they have. To that end the Commission requires companies to perform a good faith disclosure of all IP that “might be essential for the implementation of the standard under development”.¹ This requirement does not require companies to compare their available technology to the standard and positively conclude that they have no related IPR. Neither do companies have to disclose exactly what type of IPR they possess regarding (a particular development stage) of a standard. All that is necessary is that the company, as the standard develops, makes a good faith effort to locate its relevant technology and associated IPR. If any relevant IPR are found, the company in question must then merely inform the other parties that they have IPR on technology of theirs that could fulfil a particular specification. This test seeks to balance two factors: a need to disclose IPR so that a “patent ambush” can be avoided, and the need to foster participation in the standardisation process. If no disclosure requirements are implemented, the Commission may consider the standardisation process as suspect. The exact manner in which the good faith requirement should be implemented, however, is left unclear by the Commissions Guidelines.

¹ See the next section for the issue of essentiality in standardisation.

4.6 Legislative Gaps

Regarding the legal side of the process of standardisation, the main take-away is that the process should be as open and transparent as possible, but that there are several specific issues to take into account. The following gaps have been identified:

- There are limited concrete ex ante rules and procedures on open and transparent participation in standardisation that industry participants can follow, necessitating – to a large extent – the development and monitoring of such rules and procedures by undertakings themselves.
- There are no concrete ex ante rules and procedures dictating when exclusion of undertakings from standardisation is justified nor how the allocation of the voting rights within the standardisation process should take place.
- The law determines in general terms that FRAND licensing terms require binding commitments from participating undertakings. It largely fails to align these commitments with the need to foster broad industry participation, requiring companies to balance these tensions themselves.
- The regulation requires a good faith effort on the part of undertakings to disclose relevant IPR. The scope and duration of that good faith effort, however, are not specified.

5. THE STANDARD-ESSENTIAL PATENT

A technological standard for HVDC grid components will be based on a large amount of IP and patents. Some patents are essential to a standard: these are called 'standard-essential patents' (SEP). A SEP is defined as a patent that a standard must use, without which a particular standard cannot function. Depending on the nature of the standard and the market in question, a standard may contain thousands of such patents. It is relevant to know for standardisation what constitutes such a patent. The definition of standard-essential patents influences which patents should be prioritized, how they should be determined and ultimately the legal risk (under EU competition law and IP law) that a standard incurs when selecting or using the patent in question.

5.1 Which Patent is Selected?

A patent can be essential for a particular standard if the equipment or methods used in that standard cannot be carried out without violating that patent. This presupposes that a standard has been set independently of existing patents or cooperation from partners of industry, which often is not true. The process of selecting a patent requires the relevant standard setting organisation or partners of industry to determine what the best solution for a particular technical problem is. If only one patented solution exists that can meet the selected specifications, then there is no issue. That patented solution can be selected.

If, however, multiple solutions exist that can meet the relevant specification, it becomes more difficult to determine which of these solutions is *the* essential patent. A safe solution in that context would be to include all relevant patents into a standard, so that concerns of discrimination against particular patents cannot occur. Such an approach, however, would run contrary to the Commission's view.

In its Guidelines on the applicability of Article 101 the Commission prefers only one set of essential patents. The Commission tends to consider the interoperability efficiencies gained through standardisation and the efficiency lost through excessive licensing costs holistically. If multiple patents are unnecessarily included in the standard, the concomitant costs of licensing for those patents will also rise unnecessarily.

The initially gained interoperability efficiencies could then be undermined by the extra licensing costs. Including all suitable patents into the standard is therefore no solution to multiple patents meeting the chosen specification. In order for multi-terminal multi-vendor HVDC standardisation to safely select specifications and patented technology it is necessary to gain clarity on this issue.

A possible solution for the issue of multiple patents meeting the relevant specification, with no discernible difference in performance, would be addition of a commercial context. In the Guidelines on the applicability of Article 101 the Commission makes no mention of commercial criteria, but in its Guideline on technology transfers such a mention is made in reference to technology pools. Technology pools are arrangements whereby two or more parties assemble a package of technology, which is licensed not only to contributors to the pool but also to third parties.

The comparison is not perfect, as technical standards result in interoperability, which technology pools do not necessarily provide. The licensing component of IPR, whereby multiple companies in a horizontal setting bundle their IPR and provide other parties access, can nevertheless be necessary to achieve standardisation. This justifies the comparison between technology pools and technical standards.² In this guideline the Commission defines technologies as essential if “no viable substitutes (both from a commercial and technical point of view) for that technology inside or outside the pool and the technology in question” exist, and it “constitutes a necessary part of the package of technologies for the purposes of producing the product(s) or carrying out the process(-es) to which the pool relates”.³ In the context of pool-based licensing, which may be related to standardisation, commercial feasibility can give a relevant patent an edge in case of multiple technically comparable technologies. It remains unclear, however, to what extent this soft law is applicable to standardisation. The Commission considers technology pools related to standards, but does not consider them “inherently linked”.⁴ It is therefore unclear to what extent commercial consideration can help break a deadlock between multiple, on technical grounds comparable patents.

The Guidelines on horizontal coordination of art. 101 TFEU and the Guidelines on technology transfers both describe activities which are applicable to standardisation. The possibility of overlap between these two guidelines is largely left unaddressed. The first guideline covers standardisation, the second technology pools and licensing, which is often used in standards. This makes it difficult to determine to what extent the aforementioned commercial context can help determine the essentiality of patents. It also makes it difficult to determine if other factors in the technology transfer guidelines, such as the need for independent expert panels to determine the essentiality of certain patents, is applicable to standards. Additionally, it leaves unaddressed the possible complementary nature of patents in technology pools, which is allowed in the technology transfer guidelines. As the guidelines on horizontal coordination seem to only allow essential patents, it is difficult which interpretation should be applicable when the scope of both guidelines overlap.

² See the Commission’s own assessment of tech pools and standards: Communication from the Commission — Guidelines on the application of Article 101 of the Treaty on the Functioning of the European Union to technology transfer agreements, para 244-249, para . 252 et seq. See also: “C. Shapiro, Navigation the patent Thicket: Cross Licenses, Patent Pools, and Standard Setting.

³ Guidelines on the application of Article 101 of the Treaty on the Functioning of the European Union to technology transfer agreements, para . 252.

⁴ Ibid, para. 245.

5.2 Legislative Gaps

The standard-essential patent is a key concept in standardisation. However, there are certain points of attention in the selection process:

- The Commission prefers one set of Standard Essential patents per specification. It does not address standards where multiple patented solutions exist, which can all perform the specified function equally well.
- The Commission's preference for one set of technology – and therefore one set of patents – leaves unaddressed the possibility of non-essential but complementary technology.
- The Guidelines on the applicability of Article 101 do not mention commercial factors in determining essential patents. The Guidelines on technology transfer do, and specifically mention standards. It is unclear if and to what extent commercial factors can influence the essentiality of patents.
- The Commission's guidelines related to standardisation and essentiality are at times contradictory. This results in a lack of clarity regarding, for instance, the essential and complementary nature of the Standard Essential Patent.

6. FRAND LICENSING & EXCESSIVE PRICING

An important obligation pertaining to standards is the requirement of all participating companies to license their relevant IP. This licensing needs to comply with the criteria of Fair, Reasonable, and Non-Discriminatory (FRAND) licensing, as determined by the ECJ and the Commission.

A large part of the rules pertaining to FRAND licensing refers to the determination of the price. Excessively high prices are frowned upon, and should a particular licensing regime be classified as producing such prices, there will likely be a violation of competition law. However, it is difficult when exactly a licensing fee is excessive. A high licensing cost may be explained and justified by high costs of R&D, including the costs made in researching that yielded no commercially useful technology. The Commission and the ECJ furthermore lack relevant information to determine ex ante what the price for a license should be. It is therefore established practice that competition law in principle does not interfere with the prices set with licences. Intervening is more likely:

1. in a market where barriers to entry make it difficult for competitive forces to reduce licensing fees;
2. in situations where excessive fees are the result of anti-competitive behaviour, rather than a reward for expensive and risky R&D

The first situation is inherent in standards, as parts of the (technology) markets are restricted through use of the standard. The second situation may apply, though that is more difficult to determine ex ante.

6.1 Different Tests

The Commission has intervened with license fees at several instances. In doing so, it has made use of a variety of tests for whether a fee was excessive or not. The first test relates to prices that, on an absolute level, are too high. This test likely is not relevant for standardisation.

The second test attempts to establish relatively excessive prices, by comparing the license fees of comparable technologies used by other companies. The Commission might also attempt to compare the licensing fees of technology to before its integration into a standard to the license fee afterwards. If no comparable technology or companies exist, this test has little practical value. Even if there are comparisons, the Commission would have to determine those license fees are not already excessive for the test to work. A third possible methods attempt to account for the R&D costs, and base the excessive pricing on those costs. However, this method requires significant investigation into those costs and does not account for the R&D costs incurred for other technology that lack commercial value. The lacking ability of the Commission to determine objective value for technology hinders its ability to determine appropriate license fees.

A relatively recent case before the ECJ shows the possibility of a fourth test to determine excessive pricing.⁵ This test attempts to separate the strategic value of information in general and might be used in the future to determine excessive licensing costs in standards. The test assumes that only value borne out of innovation is worthwhile in licensing. Value originating from the strategic placement of a patent within a license – which market participants have to acquire due to the nature of a standard – ought to be excluded. This test still struggles with the issue of comparability mentioned previously. It therefore remains difficult for the Commission and the ECJ to determine what excessive prices are.

6.2 Legislative Gaps

Excessive prices constitute an important component of the required FRAND terms related to licensing IP within standards. The methods employed by the ECJ and the Commission to determine excessive prices lack clarity in several respects:

- There are multiple methods available to determine excessive pricing. It is unclear when each method will be used and in what combination.
- Informational and comparability issues leave companies with a lot of freedom to determine appropriate licensing fees. The lack of clarity on when exactly licensing fees are excessive leaves unclear where that freedom ends.
- Recent attempts to reduce strategic value from licensing fees may cause future issues, if the commercial practice of participating companies does include strategic value. It is unclear to what extent that is likely to occur.

7. STATIC OR DYNAMIC STANDARDS

Standardisation aims to achieve interoperability and increase general efficiency within particular markets. This requires a standard that all relevant market participants can adhere to. The greater the reach of the standard, the greater the potential interoperability and efficiency gains. A standard may evolve to such an extent that, while there is no legal obligation to use it, there will be a de facto commercial obligation to adhere to it. In static markets with little innovation this has few downsides, as the standard can generally not be greatly improved. The chosen specification does not require change over time in such contexts.

⁵ Case T-167-08 ECLI:EU:T:2012:323 27 June 2012, Microsoft Corp v Commission

7.1 Innovative Environments

In still evolving environments, such as HVDC grids and grid components currently are, the context changes. A standard's justification for existing from a competition law point of view is the interoperability and efficiency gains it can provide. The requirement of interoperability assumes, to an extent, that certain standards will be "locked in" to allow all relevant market participants to build on those standards. In innovative environments this presumption may be challenged by continual improvement. As technology improves it is possible that the technology integrated into a standard becomes increasingly outdated. The specifications of a standard ideally allow for continual adaptation to new and improved technology.

If a standard locks in its specifications and excludes the possibility of integrating more innovative technology later on, that might be taken as a point of critique by the Commission. Relevant considerations in that context are: if the standard can be formulated in such a way as to allow the relevant specifications to be changed and whether this may be done without disrupting the work other market participants have performed in complying with these specifications. Other relevant concerns are whether the relevant market can support continual improvement of the standard or if there are other good technical reasons for excluding the technology. It seems at least plausible that the Commission prefers an approach where continuous competition regarding relevant technology occurs. Of particular interest is whether the appearance of better technology at a later date may be classified as essential in the sense of section 5. It is not immediately clear if EU competition law considers it possible for new technology – introduced at a time where the standard has already been set – to be essential for a standard. Neither the ECJ's case law nor the Commissions soft law explicitly state this possibility. This lack of clarity does not, however, suggest that new technology can never be considered as essential. Much depends on the technical possibilities within a given standard.

7.2 Consequences of the Choice

The choice between a dynamic or static standard may influence the licensing arrangements that are necessary to support the standard. In a static standard the choice of technology and IP do not undergo (significant) change. The IPR associated with that technology will not change either. But in a dynamic standard, with the (possible) inclusion of future technology, the licensing arrangements made must take that future technology into consideration. Licensing arrangements that do not consider this will create the possibility where the improved technology is licensed at higher prices than before or does not get licensed at all. Licensing agreements regarding dynamic standards, that only cover the initial integrated technology, will likely not comply with the obligation to provide a FRAND license to all potential users of the standard. Failing to comply with FRAND licensing terms will increase the risk from a competition law perspective. To what extent the competition law risk increases may depend on a number of factors, such as the increase in licensing fees, the potential to reduce interoperability or other restrictions in competition. The issue remains largely unaddressed in EU case law or in the Commissions guidelines. It is consequently difficult to give clear pronouncements. To avoid the issue, it would be prudent to require all participating companies in dynamic standards to provide binding licensing commitments pertaining to current and future IPR. Such a commitment may cause concern for the requirement of open and transparent participation in standardisation, as explained in section 4.3.

7.3 Legislative Gaps

It may be beneficial for standards to be dynamic instead of static. The current regulation and soft law do not provide adequate clarity on several issues:

- The extent to which interoperability and general efficiency, gained by continuously integrating innovative technology into the standard, reduce competition law risk.
- The status of innovative technology as essential to an already developed or nearly completed standard.
- The grounds under which innovative technology, at a later date, may or must be integrated into a standard
- The appropriate licensing regime pertaining to dynamic standards.

8. TECHNOLOGY/IPR NEUTRAL SPECIFICATIONS

The specifications of a given standard are not the object of competition law per se. EU competition law does not in principle concern itself with considerations of a technical nature, unless these considerations have some influence or overlap with other areas. One topic that fits this description concerns technology or IPR neutral specifications. Technology or IPR neutral specifications refer to specifications that are designed in such a manner as to encompass a variety of technical solutions. These specifications are therefore not bound by a particular technology and, as a result, not bound by a particular IPR. Competition law generally has no opinion on the design of such specifications, provided that the efficiency gains of interoperability are reached and that the process of selecting these specifications complied with the requirements mentioned in section 4.

The relative neutrality of a standard does influence the potential ease with which new technologies can be integrated into a standard. The previous section explained the concept of dynamic standards. A technology neutral specification may better facilitate the creation of a dynamic standard. Technology neutral specifications do not require constant updating to integrate new technology, as these specifications were not originally bound to a particular technology. It will still be necessary to make proper licensing arrangements pertaining to future technology, as the previous section explained.

The neutrality of the licensing arrangement may also influence the licensing arrangements that participating companies are likely to use. If the specifications of a standard are highly neutral, there is less need for participating companies to cross-license with other participating companies. Companies with IPR will be more able to license their IP individually with standard users. This allows participating companies to avoid complex licensing arrangements like technology pools (see section 9). It may additionally allow companies to make better use of intellectual property that is not classified as a patent (see section 10). Finally, licensing under neutral specification may enable competition in the relevant technology markets. If multiple technologies exist to meet the demands of a given specification, a potential standard user may benefit from having more than one option to choose from, for example because competition between different options drives down prices for the relevant technology. A downside to technology-neutral specifications is that they may reduce the performance and efficiency gains a standard may provide. The potential licensing downsides coincide with the potential downsides of bilateral licensing. See section 9.

8.1. Legislative Gaps

Technology or IP neutral specifications within a standard may influence the ease with which standards can be updated and the licensing arrangements of the standard. Competition law has no rules pertaining to these specifications. If these specifications are used, the following questions are relevant:

- It is unclear to what extent competition law has relevance for IPR neutral specifications in standards, even if it may be technically desirable.
- Technology neutral specifications may allow for the utilization of trade secrets (see section 10). The regulation leaves unclear to what extent that possibility is positive or negative from a competition law perspective.

9. BILATERAL LICENSING OR LICENSING POOLS

Standards require large volumes of technology to fulfil its purpose of interoperability. Any company that has offered a binding licensing commitment must offer its associated IPR to would-be standard users on FRAND terms. The terms have been clarified to an extent, but the licensing arrangements have not been. Of note for standardisation and competition law is the manner in which the required licensing is carried out. There are two main variants worthy of discussion: bilateral licensing and pool-based licensing

With bilateral licensing the IPR holder will provide FRAND licenses at the request of third-party standard users. Through bilateral licensing none of the parties holding IPR engage in any coordination pertaining to joint licensing agreements. This may be considered beneficial for competition, as coordination between direct competitors is limited to the standardisation phase. Once the standard is in place, no further coordination is necessary. This lack of coordination, which is an essential element of pool-based licensing, can more easily allow competition between IPR holders and increase competitive pressure. Bilateral licensing can synergize quite well with IPR neutral specifications, provided that multiple patented solutions exist. Bilateral licensing can, however, increase transactions costs for third-party standard users. It may also make upgrading the standard more complex, at least if IP neutral specifications cannot be effectively realized. Without one centralized “hub” for relevant patents, new patents may require new licensing arrangements to be negotiated with third-party standard users.

Pool-based licensing allows multiple standardizing companies to integrate their relevant IPR into a single “pool” of technology. The technology pool has several advantages over bilateral licensing. While initially more complex to arrange, the technology pool offers third-party standard users one single license for all necessary IPR. This can reduce the transaction costs associated with standard-related licensing. A technology pool becomes more relevant the greater the number of participants and associated IP. If the specifications of a standard cannot achieve sufficient IP neutrality, a pool-based licensing model becomes even more useful. Bilateral licensing in a large standard without IP neutral specifications requires a third-party standard user – if all relevant IP is not held by a few companies – to expend considerable effort to acquiring all relevant licenses. It may also be easier to update the standard through usage of a technology pool, as one license can be connected to one continuously updatable pool. The downsides of a pool-based system largely revolve around its difficulty to set up and the remuneration formula employed for each participant. Pool-based licensing also complicates the issue of trade secrets and other valuable know-how

related to patented technology.⁶ Finally, pool-based licensing may provide competing companies more means to coordinate on what can be competition sensitive information.

9.1. Legislative Gaps

Licensing will be key in facilitating the smooth development and usage of a standard. There are two main forms of licensing available, with each having distinct advantages and disadvantages. A number of gaps in the regulation or issues of clarity exist pertaining to these two forms of licensing:

- > It is unclear ex ante which licensing form would be most appropriate for a particular standard.
- > There is a general lack of clarity between favourability of bilateral licenses and technology pools.
- > There is a general lack of clarity pertaining to issues of overlap between technology pool licensing and its usage in standardisation.
- > It is not clear to what extent the possibility of increased coordination influences the legal risk pertaining to technology pools.
- > It is unclear to what extent a possible reduction in transaction costs with technology pools influences the legal risk pertaining to technology pools.

10. TRADE SECRETS IN TECHNICAL STANDARDS

Patents concerns technical information publicly registered, which grants a legal monopoly on either a particular process or invention. Not all technical information can be patented, however, and not all patentable information is patented. Of particular note is the concept of trade secrets, which are defined as:

1. secret in the sense that it is not, as a body or in the precise configuration and assembly of its components, generally known among or readily accessible to persons within the circles that normally deal with the kind of information in question;
2. having commercial value because it is secret;
3. subject to reasonable steps under the circumstances, by the person lawfully in control of the information, to keep the information secret;

Such information can be protected from a variety of unlawful methods of acquisition. A trade secret may furthermore be commercially exploited in a variety of ways, often with a variety of safeguards in place. Think of: black box methods, whereby the use of the trade secret may be possible but all knowledge pertaining to the trade secret is kept in the hands its holder, or extensive confidentiality agreement, with high sanctions in place for violations. Such information cannot be licensed in a similar manner as with patent law. Moreover, as is argued in section 10.2 below, one could argue that as soon as a trade secret is part of a standard, it is no longer a trade secret because part 2 of the three-step definition is no longer fulfilled.

This leaves a lot of commercially sensitive information that exists outside the scope of an ordinary license. From a licensing perspective this is an issue, as the value of this information relies on its relative secrecy. Depending on the nature and scope of technically important and commercially sensitive information it

⁶ See section 10 on the interplay between bilateral/pool-based licensing and trade secrets.

may become difficult to effectively standardize. If companies either have or develop technology that is only partly patented or patentable, just the usage of the patented information may not be sufficient to fully utilize it. Nor may a company be willing to share that information broadly, due to its protection relying on relative secrecy.

10.1 Interdependence with Choices for Licensing

Depending on the amount of trade secrets and their necessity to make patented solutions work (optimally), the licensing framework needs to shift. Pool-based licensing seems unfeasible, considering the requirement that the information must not generally be known by the relevant industry. Bilateral licensing could better facilitate some sharing or utilization of trade secrets or other relevant know-how. Even if relevant legal arrangements can be made, the trade secret cannot be fully integrated into the standard. The required secrecy prevents it. It can only be an attachment to a license related to patented technology that has been adopted into the standard.

10.2 Legislative Gaps

Trade secrets constitute de facto monopolies regarding information. Trade secrets and their interaction with standardisation reveals several gaps in the regulation:

- > To what extent does competition allow licensing arrangements to depend on trade secrets, which are not integrated into a standard
- > To what extent do the practical requirements of non-disclosure agreements coincide with the requirement of FRAND licensing terms?
- > Trade secrets are not part of a standard. Does competition law allow the standardisation process and the selection of specifications to be influenced by trade secrets?
- > The Commission might frown upon licensing fees which depend on strategic value. Does the secret nature of a trade secret constitute strategic value in terms of excessive licensing fees?

11. LIABILITY

The change in roles, duties and responsibilities in HVDC projects with multiple vendors and multiple owners, has a significant impact on liability and warranty in the overall system.

11.1 Independent Turn-key HVDC Projects

Today, point-to-point and a few multi-terminal HVDC transmission systems are built or under construction as single-vendor turnkey projects. The system owners (TSOs or others) specify the system as a whole. Interfaces at the AC grid connection or access points are defined in harmonised network codes for the AC grid connection for HVDC systems, providing a clear legal framework.

In such turnkey projects, as shown in Figure 1 (left), the contractor (e.g. a HVDC manufacturer) is responsible for the design and execution within the boundaries that are set by the system owner. The contracts typically include engineering, procurement and construction (EPC) and even installation (EPCI).

Consequently, the contractor is liable for defects in design as well as for installation and commissioning. If during this, or a later phase the system is not providing the guaranteed performance according to the contract, the owner can recover costs related to damages or downtimes from the contractor as dictated by the specific project contract conditions.

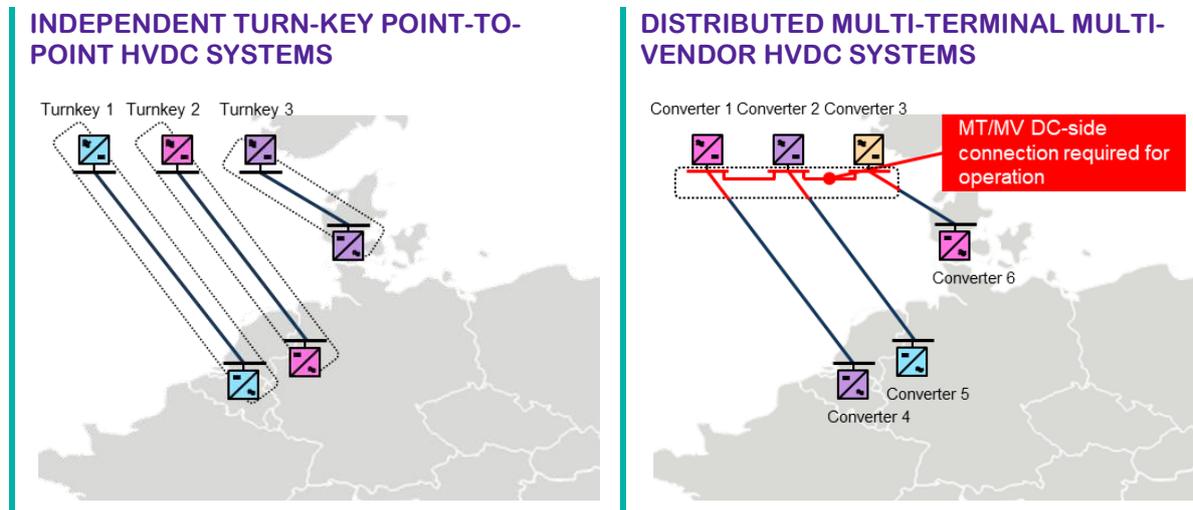


Figure 1 From independent turn-key point-to-point (left) to distributed (right) multi-terminal multi-vendor HVDC systems

11.2 Distributed Multi-Terminal HVDC Systems

Moving from single-vendor turnkey HVDC systems to multi-terminal multi-vendor systems will shift part of the design and execution responsibility from the manufacturer to the owner and operator of the DC grid. Owners and operators will need to specify each module (e.g. converter stations) individually, as indicated in Figure 1 (right), while being liable for the performance and the security of the overall system. In case of design errors – in particular related to the interoperability of different modules – the entire system might not be able to operate.

To derive liabilities, the roles and responsibilities of all involved parties need to be clearly assigned and mutually respected. Procurement process and contracts that adequately allocate liability and warranty risks within this new context need to be formulated. Therefore, TSOs and manufacturers are needed to derive the risks – especially liability risks – arising from multi-terminal multi-vendor connection for all phases of a project. This includes:

- Design and procurement
- Engineering and commissioning
- Operation and Maintenance
- Refurbishment and decommissioning

11.3 DC-side Connection of Turn-key P2P HVDC Systems

As the roles and responsibilities of the different parties and accordingly risks and liabilities in fully distributed multi-vendor systems are not defined yet, owners might be locked in realising single-vendor systems, regardless of the benefits of multi-vendor systems.

Moreover, despite the benefits of multi-terminal HVDC system, their development must not endanger other core tasks related to the energy transition:

- Offshore HVDC systems must reliably transmit wind energy to shore
- Onshore HVDC corridors and interconnectors must transmit bulk power between new (renewable) generation and load centres
- HVDC projects need to be realised in time and the execution times shall not be extended

A feasible way to reduce the risk associated with multi-terminal multi-vendor HVDC systems is to interconnect turnkey systems, as shown in Figure 2. In case problems should occur with the connection of systems from different vendors, the system can be separated and fall back into turnkey subsystems. Thus, the risk of outages of the entire system can be reduced and possible interoperability issues can be solved with diligence required.

Such a setup might result in the allocation of roles and liability risks, which needs to be taken into consideration in the overall legal framework.

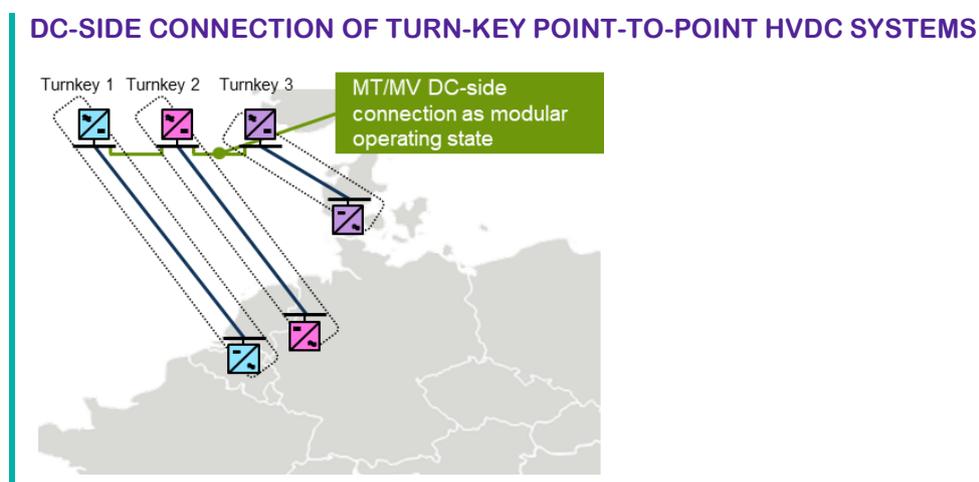


Figure 2 Step in between: DC-side connection of turn-key point-to-point HVDC systems

11.4 Liability Gaps

The path from turnkey to distributed multi-terminal multi-vendor system creates a paradigm shift in terms of risk allocation and liability aspects. Several gaps need to be addressed:

- To define and allocate liabilities and warranties, risk allocation and system responsibilities need to be defined for the different scenarios outlined in the deliverable for all relevant project phases.
- Procurement schemes and tendering procedures suited for the multi-terminal multi-vendor projects owned and tendered by different entities need to be developed.
- Principles determining liability and warranty assignment in the event of malfunctioning and interoperability issues must be derived. These must be compatible with technical methods for detecting and assigning such issues.

12. EU NETWORK CODES

Although their content is highly technical, network codes are in essence legal documents, which is why they are also included in this Deliverable. The current EU Network Codes aim for a smooth operation of the European electricity network. The network codes were drafted with the existing AC network in mind. The network code dedicated to HVDC systems, Commission Regulation (EU) 2016/1447 establishing a network code on requirements for grid connection of high voltage direct current systems and direct current-connected power park modules, is aimed at point-to-point systems and specific applications, but not at a multi-vendor, multi-terminal HVDC network. This is a gap in the existing legal framework. Therefore, at some point, after the functional requirements have been specified and tested, and roles and responsibilities have been clearly assigned, the network codes need to be adapted to the needs of such a multi-vendor, multi-terminal HVDC network. In this process, it needs to be foreseen that the first large-scale HVDC demonstrator project(s) will probably lead to several insights and fine-tuning, so the learnings from this phase need to be taken into account at some point as well.

It goes beyond the scope of this Work Package to identify all issues and gaps in the existing Network Codes regarding the implementation of a multi-terminal HVDC network, but it is important that the Network Codes are ready for multi-terminal HVDC systems when the technology is ready to be implemented. This requires the relevant actors to start in time with the drafting process.

13. CONCLUSION

This deliverable analyses various legal/regulatory issues that play a role in the development of a multi-vendor, multi-terminal HVDC grid: the cooperation required between different actors, namely Governance and Cooperation between Undertakings (in light of competition law); standardisation, patents and licenses; the division of risks and liability between different companies; and finally, the EU Network Codes. The Deliverable also aimed to identify legislative gaps or issues in the current legal framework. These issues and gaps will be input to the further work of READY4DC WG2.

An overview of the results, the identified gaps per theme, is provided below. On the basis of these identified gaps, we conclude that there are still several issues that need to be addressed in the legal framework in order to develop a multi-vendor, multi-terminal HVDC network in a cost-effective way. A limitation of this study is that the results have only been reviewed by the members of the Working Group and that the focus is solely on identifying the barriers, rather than analysing how they could be addressed. Therefore, as a next step, the next Deliverable (Q2 2023) will take the form of a whitepaper with recommendations on how to address the identified gaps. Moreover, in order to test whether a broader group of stakeholders agrees to the identified barriers and solutions, there will be a stakeholder consultation event. The feedback from stakeholders will be incorporated, after which a Final Whitepaper will be produced (Q3 2023).

Organised by theme, the following gaps have been identified:

GOVERNANCE

- Coordination now takes place on a bilateral basis, whereas coordination within a larger structure is necessary to reach interoperability between different sub-systems/vendors. There is no legal basis for such a larger structure yet
- As the roles and responsibilities of the different parties in a multi-vendor situation are not entirely clear yet, customers are locked in single vendor systems, even though multi-vendor systems would lead to several benefits in terms of easy extendibility.

COOPERATION BETWEEN UNDERTAKINGS

- No ex-ante certainty that cooperation by a large group of undertakings (covering a large market share) is allowed by the EC
- The safe harbours (market shares for when Block Exemption Regulations are valid) are relatively low, whereas it would be best if a large percentage of the market participates in the standardisation
- The distinction between R&D and specialization agreements is not entirely clear. The instruments do not provide clarity on consequences of overlap.
- Fixing of prices is possible in certain limited instances. However, the rules on the fixing of prices are not entirely clear in practice.

STANDARDISATION

- There are limited concrete ex ante rules and procedures on open and transparent participation in standardisation that industry participants can follow, necessitating – to a large extent – the development and monitoring of such rules and procedures by undertakings themselves.
- There are no concrete ex ante rules and procedures dictating when exclusion of undertakings from standardisation is justified nor how the allocation of the voting rights within the standardisation process should take place.

- The law determines in general terms that FRAND licensing terms require binding commitments from participating undertakings. It largely fails to align these commitments with the need to foster broad industry participation, requiring companies to align these tensions themselves.
- The regulation requires a good faith effort on the part of undertakings to disclose relevant IPR. The scope and duration of that good faith effort, however, are not specified.

THE STANDARD-ESSENTIAL PATENT

- The Commission prefers one set of Standard Essential patents per specification. It does not address standards where multiple patented solutions exist, which can all perform the specified function equally well
- The commission's preference for one set of technology – and therefore one set of patents – leaves unaddressed the possibility that not essential but complementary technology
- The Guidelines on the applicability of Article 101 do not mention commercial factors in determining essential patents. The Guidelines on technology transfer do, and specifically mention standards. It is unclear if and to what extent commercial factors can influence the essentiality of patents.
- The Commission's guidelines related to standardisation and essentiality are at times contradictory. This results in a lack of clarity regarding, for instance, the essential and complementary nature of the Standard Essential Patent.

FRAND AND PRICING OF PATENTS

- There are multiple methods available to determine excessive pricing. It is unclear when each method will be used and in what combination.
- Informational and comparability issues leave companies with a lot of freedom to determine appropriate licensing fees. The lack of clarity on when exactly licensing fees are excessive leaves unclear where that freedom ends.
- Recent attempts to reduce strategic value from licensing fees may cause future issues, if the commercial practice of participating companies does include strategic value. It is unclear to what extent that is likely to occur.

STATIC OR DYNAMIC STANDARDS

- The extent to which interoperability and general efficiency, gained by continuously integrating innovative technology into the standard, reduce competition law risk.
- The status of innovative technology as essential to an already developed or nearly completed standard.
- The grounds under which innovative technology, at a later date, may or must be integrated into a standard
- The appropriate licensing regime pertaining to dynamic standards.

TECHNOLOGY/IP NEUTRAL SPECIFICATIONS

- It is unclear to what extent competition law has relevance for IP neutral specifications in standards, even if it may be technically desirable.
- Technology neutral specifications may allow for the utilization of trade secrets. The regulation leaves unclear to what extent that possibility is positive or negative from a competition law perspective.

BILATERAL LICENSING OR LICENSING POOLS

- It is unclear ex ante which licensing form would be most appropriate for a particular standard
- There is a general lack of clarity between favourability of bilateral licenses and technology pools
- There is a general lack of clarity pertaining to issues of overlap between technology pool licensing and its usage in standardisation.

- It is not clear to what extent to possibility of increased coordination influences the legal risk pertaining to technology pools.
- It is unclear to what extent a possible reduction in transaction costs with technology pools influences the legal risk pertaining to technology pools.

TRADE SECRETS IN TECHNICAL STANDARDS

- To what extent does competition allow licensing arrangements to depend on trade secrets, which are not integrated into a standard
- To what extent do the practical requirements of non-disclosure agreements coincide with the requirement of FRAND licensing terms?
- Trade secrets are not part of a standard. Does competition law allow the standardisation process and the selection of specifications to be influenced by trade secrets?

LIABILITY

- To define and allocate liabilities and warranties, risk allocation and system responsibilities need to be defined for different project scenarios, i.e. distributed multi-terminal multi-vendor HVDC systems and interconnected turnkey HVDC system, for all relevant project phases.
- Procurement schemes and tendering procedures suited for the multi-terminal multi-vendor projects owned and tendered by different entities need to be developed.
- Principles determining liability and warranty assignment in the event of malfunctioning and interoperability issues must be derived. These must be compatible with technical methods for detecting and assigning such issues.

EU NETWORK CODES

- The EU Network Codes are not fit for multi-terminal, multi-vendor networks. They need to be amended in time.

ABBREVIATIONS AND ACRONYMS

AC	Alternating Current
EC	European Commission
EPC	engineering, procurement and construction
EPCI	engineering, procurement, construction and installation
ECJ	European Court of Justice
FRAND	Fair, Reasonable and Non-Discriminatory
HVDC	High Voltage Direct Current
IP	Intellectual Property
IPR	Intellectual Property Rights
R&D	Research and Development
TFEU	Treaty on the Function of the European Union
TSO	Transmission System Operator

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