



EUROPEAN COMMISSION  
DG Competition

***Case M.10598 - LGC / TORAY  
INDUSTRIES HUNGARY***

Only the English text is available and authentic.

**REGULATION (EC) No 139/2004  
MERGER PROCEDURE**

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Article 6(1)(b) NON-OPPOSITION  
Date: 31/05/2022

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## EUROPEAN COMMISSION

Brussels, 31.5.2022  
C(2022) 3725 final

### **PUBLIC VERSION**

In the published version of this decision, some information has been omitted pursuant to Article 17(2) of Council Regulation (EC) No 139/2004 concerning non-disclosure of business secrets and other confidential information. The omissions are shown thus [...]. Where possible the information omitted has been replaced by ranges of figures or a general description.

LG Chem, Ltd.  
LG Twin Tower, 128, Yeoui-daero,  
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Korea

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Japan

**Subject: Case M.10598 - LGC / TORAY INDUSTRIES HUNGARY  
Commission decision pursuant to Article 6(1)(b) of Council Regulation  
No 139/2004<sup>1</sup> and Article 57 of the Agreement on the European Economic  
Area<sup>2</sup>**

Dear Sir or Madam,

- (1) On 27 April 2022, the European Commission received notification of a proposed concentration pursuant to Article 4 of the Merger Regulation by which LG Chem, Ltd. ('LGC', South Korea) together with Toray Industries Inc. ('Toray', Japan) acquire within the meaning of Article 3(1)(b) and 3(4) of the Merger Regulation

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<sup>1</sup> OJ L 24, 29.1.2004, p. 1 (the 'Merger Regulation'). With effect from 1 December 2009, the Treaty on the Functioning of the European Union ('TFEU') has introduced certain changes, such as the replacement of 'Community' by 'Union' and 'common market' by 'internal market'. The terminology of the TFEU will be used throughout this decision.

<sup>2</sup> OJ L 1, 3.1.1994, p. 3 (the 'EEA Agreement').

joint control of the whole of Toray Industries Hungary Korlátolt Felelősségű Társaság (Hungary, the 'JV' or the 'Target'), currently solely controlled by Toray<sup>3</sup> ('concentration' or 'Proposed Transaction'). The concentration is accomplished by way of purchase of shares. LGC and Toray are designated hereinafter as the 'Notifying Parties' or 'Parties to the Proposed Transaction'.

## **1. THE PARTIES**

- (2) LGC is a chemical company active in the petrochemical business, advanced material business, bioscience business and battery business.
- (3) Toray is a chemical company active in the manufacture, processing and sale of various materials for automobiles, aircraft, information technology-related products and products related to life sciences.
- (4) The JV will be manufacturing and supply battery separators.

## **2. THE CONCENTRATION**

- (5) This concentration concerns the acquisition of a 50% share and joint control by LGC in the JV from Toray Industries Inc., leaving Toray with a 50% stake in the JV. The JV was incorporated in Hungary on 18 April 2018. It has so far operated as a Toray subsidiary, and will be operated as a joint venture upon closing of the Proposed Transaction.
- (6) Pursuant to the Quota Subscription Agreement entered into on 27 October 2021, LGC will make a capital contribution to the JV, represented by a quota having a nominal value of 50% of the JV's registered capital.
- (7) Separately, and pursuant to the Joint Venture agreement (the 'JVA'), on the date that falls at the end of the [...] months from the closing date of the Proposed Transaction, Toray will transfer an additional [...] % of the JV's registered capital to LGC, resulting in LGC exercising sole control over the JV (see article 5 of the JVA). However, this subsequent change to sole control is subject to customary regulatory approvals as well as subject to the terms and conditions provided in Article 5.5 of the JVA. Accordingly, if the required regulatory approvals are not obtained, the sole control acquisition may eventually not take place. Given the particularly long start-up period and the uncertainties surrounding the change to sole control, the joint control period will have a distinct impact on the market structure within the meaning of paragraph 34 of the consolidated jurisdictional notice.
- (8) According to the JVA and Statement of Intent, the JV has sufficient resources to operate independently on the market, in the sense of paragraph 94 of the Jurisdictional Notice<sup>4</sup>, as it has its own day-to-day management, assets, access to financing and staff.

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<sup>3</sup> Publication in the Official Journal of the European Union No C 183, 5.5.2022, p. 8.

<sup>4</sup> Commission Consolidated Jurisdictional Notice under Council Regulation (EC) No 139/2004 on the control of concentrations between undertakings, OJ C 95, 16.4.2008, p. 1–48

- (9) The JV does not only take over a specific function for the parents within the meaning of paragraphs 95-96 of the Jurisdictional Notice. Neither does the JV rely almost entirely on sales or purchases from or to its parents within the meaning of paragraphs 97 and following of the Jurisdictional Notice. Concretely, while the JV will initially make all of its sales to one of its parents (LGC), any sales made are on arm's length conditions. Indeed, the general intention as described in the JVA is to have transactions between the JV and its parents negotiated in good faith and on similar terms as with unrelated third parties. Furthermore, this sales relationship will only last for a start-up period of approximately [...]. Indeed, as confirmed by internal documents submitted by the Parties<sup>5</sup>, as of [...], the sales to third parties will represent more than [...] % of the total JV's sales. This is in line with the overall purpose of the JV as described in the JVA and Statement of Intent to commercialise its products and develop more third-party customers. The JV will have, inter alia, its own marketing department to market to third Parties. Thus, on balance, the JV is geared to play an active role on the market, despite the start-up period.
- (10) The JV is intended to operate on a lasting basis in the sense of point 103 of the Jurisdictional Notice. Overall, the potential change to sole control will not affect its operations in terms of sales to third persons. Along with its manufacturing activity, the JV is expected to set up a marketing and sales department from day one, and thus also within the period when joint-control will be exerted.
- (11) Therefore, the Proposed Transaction will lead to the creation of a full functional joint venture.

### **3. UNION DIMENSION**

- (12) The undertakings concerned have a combined aggregate world-wide turnover of than EUR [...] million (Toray EUR [...] million in 2021; LGC EUR [...] million in 2021). Each of them has an EU-wide turnover in excess of EUR 250 million (Toray EUR [...] million in 2020; LGC EUR [...] million in 2021), and none of the undertakings concerned achieves more than two-thirds of its aggregate Union-wide turnover within one and the same Member State.
- (13) The Proposed Transaction therefore has an EU dimension pursuant to Article 1(2) of the Merger Regulation.

### **4. MARKET DEFINITION**

- (14) There are no affected horizontal markets.
- (15) There is a vertical link between the manufacture and supply of battery separators upstream and the manufacture and supply of battery cells and modules downstream.

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<sup>5</sup> [...]

#### 4.1. Battery separators (upstream)

- (16) The Commission has not previously assessed the markets for battery separators<sup>6</sup>.
- (17) As regards the relevant product market, in a state aid decision<sup>7</sup> that concerned the Toray plant that will be transferred to the JV, the Hungarian authorities considered that the relevant product market was the market for battery separators.
- (18) Battery separators can be classified as either (i) wet or dry separators; each type can be manufactured either as (ii) bare or coated separators.
- (a) LGC manufactures wet coated separators and is only using them internally in its production of lithium-ion batteries ('LIBs');
  - (b) Toray manufactures wet bare and coated separators and supplies these products to third parties globally, including LGC, and uses part of its bare separators for its internal production of coated separators; and
  - (c) The JV will manufacture wet separators – both bare (until [...]) and coated<sup>8</sup> (from [...] onwards) and will for the start-up period mentioned in paragraph 6 supply one of LGC's subsidiaries, LG Energy Solutions (hereinafter 'LGES'), which manufactures LIBs.
- (19) The Notifying Parties explain that dry separators are progressively losing importance due to their inferior performance characteristics. Most of the manufacturers progressively switch to wet separators in various kinds of batteries and all new electric vehicle lithium-ion batteries ('EV LIBs') are nowadays designed with wet separators.
- (20) The Notifying Parties further consider that wet separators have to be sub-segmented into bare and coated separators. They argue that from the demand-side perspective, coated separators have superior performance characteristics (in particular better heat resistance enhancing battery safety, battery capacity and power), which makes them more suitable for high-end batteries. For example, LGES uses only coated separators for manufacturing EV LIBs. This limits demand-side substitutability. On the supply-side, some manufacturers only produce bare separators, such as Toray, while others specialise in coating them, such as LGC, and some manufacturers provide both of them. The JV will first produce wet bare separators that will be coated by LGC and starting from [...], the JV will produce exclusively wet coated separators by combining Toray's and LGC's technology. The Notifying Parties note that there is a certain degree of substitutability on the supply-side. However, the Notifying Parties have provided

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<sup>6</sup> A separator is used to separate the cathode and anode of the battery apart in order to prevent a short circuit caused by the contact between two electrodes, while allowing electrolyte ions to pass through. It is a porous and thin membrane made with polyethylene (PE) and polypropylene (PP) as raw materials. A separator plays two roles: as a channel for ions to move and thereby maintaining the electronic chemical reaction; and as a barrier against any electric short circuits by preventing direct contact between the cathode and the anode. If a LIB overheats and its temperature subsequently exceeds a certain level, the separator will close itself so that ions cannot pass through it, which would then suspend the battery operation and prevent explosion. (Form CO, paragraph 141).

<sup>7</sup> Decision SA.54226 (2019/N) *Regional investment aid to Toray industries – Tarsa*.

<sup>8</sup> Bare only during [...] and [...], then coated only from [...]

information following a conservative approach by considering wet coated separators separately from wet bare separators.

- (21) For the purposes of the present decision, the exact product market definition can be left open as no competition concerns would arise irrespective of the exact market definition even for the narrowest plausible, namely EV LIBS with wet bare separators, on the one hand, and EV LIBs with wet coated separators, on the other hand.
- (22) As regards the geographic delineation of these segments, the Commission has not previously taken a position on the scope of the potential markets for battery separators.
- (23) According to the Notifying Parties, the potential markets for battery separators, both bare and coated, could be global in scope due to the fact that:
- (a) the manufacturers are active globally, even if for the moment concentrated in Asia,
  - (b) the customers – battery manufacturers – are also active globally and for the moment also concentrated in Asia,
  - (c) there are no or only single digit tariffs,
  - (d) no meaningful price differences between geographies, and
  - (e) transportation costs represent less than [...] % of the value due to their light weight and thin shape.
- (24) The market investigation indicated that the production of battery separators has been traditionally concentrated in Asia, in the vicinity of the main battery manufacturers. With the ramping up of production of electric vehicles across the world, the manufacturers of the electric vehicle batteries increasingly require regional availability of batteries or, alternatively, enter into partnerships with (newly established) regional electric vehicle battery manufacturers to establish a local presence. The manufacturers of battery components, therefore, follow this trend by establishing their subsidiaries in the regions outside Asia. The market participants explained that the market for battery separators is still global with the reinforcing EEA production capacity.
- (25) However, for the purposes of the present decision, the delineation of the geographic scope of the market can be left open, as the transaction would not raise serious doubts irrespective of the specific market definition even for the narrowest plausible, namely EEA-wide markets.

#### **4.2. LIBs (downstream)**

- (26) In previous decisions concerning batteries<sup>9</sup>, in terms of product market definition, the Commission has distinguished between ‘primary’ (also known as disposable) and ‘secondary’ (also known as rechargeable) batteries. Within rechargeable batteries, the Commission has previously differentiated the market into three

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<sup>9</sup> M.5421 - *Panasonic/Sanyo*, paragraph 116.

separate product markets: (i) portable batteries; (ii) heavy-duty industrial batteries; and (iii) automotive batteries.

- (27) In the most recent decision concerning automotive batteries, namely case *Peugeot SA / SAFT / ACC*<sup>10</sup>, the Commission identified the market for the manufacture and supply of automotive battery cells and modules (excluding battery systems) using Li-ion technology ('LIBs') as the narrowest plausible product market.
- (28) The Notifying Parties submit that, in line with the Commission's decisional practice in relation to secondary (also as rechargeable) batteries know, the market for the manufacture and supply of LIBs could be segmented into those for (i) small devices (portable batteries), (ii) energy storage systems ('ESS') and (iii) electric vehicles ('EVs'). Such classification in their view is justified by: the difference in customer base, the difference in characteristics for different end-uses with limited substitutability between them (small devices/EVs) and significant difference in LIB prices for each product category.
- (29) LGC, through its subsidiary LGES, is active in the manufacture and supply of all three LIB types, namely in cells for portable batteries, energy storage systems ('ESS') and electric vehicles ('EV'). EV LIBs represent the highest share of the LIB market.
- (30) The Notifying Parties further submit that there are three types of EV LIBs: pouch, cylindrical and prismatic. From the car manufacturer's (demand side) point of view, pouch, cylindrical and prismatic types of EV LIBs are interchangeable, since the car manufacturers decide which type to use during the design stage for a new vehicle model. Once the model is designed, however, there is no demand side substitutability since a different type of LIB cannot be used in that vehicle. From the battery manufacturer's perspective on the supply side, the different types of LIBs (portable batteries, ESS and EVs) are not inter-changeable because switching production between these would require changes in the production process. The same battery manufacturer may however produce several types of EV LIBs, e.g. LGES manufactures pouch and cylindrical EV LIBs.
- (31) For the purposes of the present decision, the exact product market definition can be left open as no competition concerns would arise irrespective of the exact market definition, even under the narrowest plausible product definition, namely the manufacture and supply of pouch, of cylindrical and of prismatic type EV LIBs respectively.
- (32) In previous cases relating to batteries<sup>11</sup>, the Commission has indicated that the geographic markets for the manufacture and supply of automotive battery markets are at least EEA-wide and possibly worldwide in scope, but ultimately left the geographic market definition open.
- (33) The exact geographic market definition can be left open for the purposes of this decision, since the proposed Transaction does not lead to serious doubts in relation

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<sup>10</sup> Commission Decision in Case M.9479 – PSA / SAFT / ACC (2020).

<sup>11</sup> Cases M.9479 - PSA / SAFT / ACC (2020), M.5421 - Panasonic/Sanyo (2009).

to any of the plausible markets, even under the narrowest plausible, namely EEA-wide geographic market definition.

## 5. COMPETITIVE ASSESSMENT

- (34) The Proposed Transaction mainly results in a future vertical relationship between the JV's wet coated separators production upstream and LGC's wholly owned subsidiary, LGES's, EV LIBs production<sup>12</sup> downstream. This vertical relationship will be created only in [...], when the JV begins to produce wet coated separators.
- (35) When considering the alternative plausible market definitions, the Parties' activities will give rise to only one vertically affected market between the manufacture and supply of wet coated separators upstream and the manufacture and supply of EV LIBs, if the narrowest plausible geographic market is considered for the latter, which would be the EEA, and provided that LGES maintains a similar market share in EV LIB's downstream market as today.<sup>13</sup> The Commission's assessment below would lead to the same result in case of a potential broader product market for the manufacture and supply of bare and coated separators upstream.
- (36) Notably, in 2020 LGES had a market share of approximately [30-40]% on the downstream EEA EV LIB market.<sup>14</sup> LGES' and its competitors' market shares on the EEA EV LIB market are included in more detail in the table below.

**Figure 1 – Market shares for the manufacture and supply of EV LIBs in the EEA**

Company Name	2017		2018		2019		2020	
	Volumes (GWh)	Market share	Volumes (GWh)	Market share	Volumes (GWh)	Market share	Volumes (GWh)	Market share
LGES	[...]	[20-30]%	[...]	[20-30]%	[...]	[30-40]%	[...]	[40-50]%
CATL	[...]	[0-5]%	[...]	[0-5]%	[...]	[0-5]%	[...]	[10-20]%
SK Innovation	[...]	[0-5]%	[...]	[5-10]%	[...]	[5-10]%	[...]	[10-20]%
Samsung SDI	[...]	[20-30]%	[...]	[20-30]%	[...]	[10-20]%	[...]	[10-20]%
Panasonic	[...]	[30-40]%	[...]	[20-30]%	[...]	[30-40]%	[...]	[10-20]%

<sup>12</sup> The Notifying Parties manufacture exclusively wet separators with the combined worldwide and EEA market share below 20%, if separate market segment for wet separators was considered.

<sup>13</sup> There is no affected market when considering EV LIB as global market.

<sup>14</sup> If a wider product or geographic market is considered, the Proposed Transaction does not give rise to vertically affected markets. Notably, on a global LIB market LGES had a market share of approximately [10-20]% in 2020, and on a global EV LIB market LGES had roughly [20-30]% in 2020.



Company Name	2017		2018		2019		2020	
	Volumes (GWh)	Market share	Volumes (GWh)	Market share	Volumes (GWh)	Market share	Volumes (GWh)	Market share
Envision AESC	[...]	[5-10%]	[...]	[10-20%]	[...]	[5-10%]	[...]	[0-5%]
tba	[...]	[0-5%]	[...]	[0-5%]	[...]	[0-5%]	[...]	[0-5%]
GS Yuasa	[...]	[5-10%]	[...]	[0-5%]	[...]	[0-5%]	[...]	[0-5%]
Panasonic-Sanyo	[...]	[5-10%]	[...]	[0-5%]	[...]	[0-5%]	[...]	[0-5%]
Others	[...]	[0-5%]	[...]	[0-5%]	[...]	[0-5%]	[...]	[0-5%]
TOTAL	[...]	<b>100%</b>	[...]	<b>100%</b>	[...]	<b>100%</b>	[...]	<b>100%</b>

Source: Form CO, Table 16, page 58.

- (37) In light of the current EEA market share of LGES in EV LIB sales in the EEA, the market investigation therefore mainly focused on whether the Parties would have the ability to engage in a customer foreclosure strategy for EV LIB separator manufacturers. The Commission also assessed whether the proposed transaction could result in input foreclosure risks.

## 5.1. Customer foreclosure

### 5.1.1. Ability

- (38) First, the market investigation confirmed the Parties' claim that LGES's 2020 market share was a temporary situation, which is not a measure of lasting market power.
- (39) The temporary spike in the sales in 2020 was [...]. As can be seen from **Figure 1 – Market shares for the manufacture and supply of EV LIBs in the EEA**, LGES's sales volumes increased from [...] in 2019 to [...] GWh in 2020; about [...] of these sales ([...]GWh out of the [...]GWh) are related to [...] group. [...] group however recently announced that it would be using another type of LIBs, prismatic-type LIBs<sup>15</sup> This type of LIBs is not currently produced, nor envisaged to be produced, by LGES and the Notifying Parties have stated, which was not contested by any market participant during the market investigation, that *'switching between producing these would require changes in the production process (since it is a change in the physical shape of the battery, such change would require adjustments to the production line, construction of new facilities or equipment as well as sourcing additional raw materials)*<sup>16</sup>.
- (40) Second, there are sufficient other channels for upstream separator manufacturers to market their products for EV LIBs. Notably, there is an increasing number of other

<sup>15</sup> [...]

<sup>16</sup> Form CO, paragraph 130.

EV LIB manufacturers, e.g. Northvolt, Britishvolt, Italtvolt, ACC<sup>17</sup>. All battery separator manufacturers can manufacture separators suitable for any type of EV LIB without a substantial investment<sup>18</sup>. Car manufacturers are also increasingly internalising the manufacturing of EV LIBs, which further increases the demand for battery components, such as battery separators. Indeed, several market participants confirmed that car manufacturers invest into their own EV LIB development and manufacturing solutions. For example, Mercedes-Benz bought an equity stake in ACC (a specialised EV LIB manufacturer)<sup>19</sup> with whom it is now working together and Volkswagen has set up a European company as a platform for its own battery cell and module development<sup>20</sup>.

- (41) Taking into account the above, the ability of LGES to run a customer foreclosure strategy against other battery separator manufacturers in the EEA market appears unlikely.

#### 5.1.2. *Incentive*

- (42) LGES currently does not procure all of its requirements for coated separators internally from LGC, but already sources those from third parties, such as [...]. The Proposed Transaction should not change this situation: there is a strong expected growth in the LIB market, and even under the assumption that the JV operates at full production capacity and that 100% of the JV's capacity is supplied to LGES, the JV will not be able to fulfil all of LGES' requirements for wet coated separators. More precisely, there would remain over [...]% of LGES demand (in 2022) which would not be fulfilled by the Parties or the JV. Accordingly, LGES will need to continue to source wet coated separators from third parties and therefore would have little incentive to internalise the supply of wet coated separators to LGES entirely.
- (43) The Parties would therefore unlikely have an incentive to run any customer foreclosure strategy as LGES will continuously act as one of the customers for wet coated separators.

#### 5.1.3. *Impact*

- (44) The market participants contacted in the market investigation expect no negative impact of the Proposed Transaction for their business or markets<sup>21</sup>, which is consistent with the above assessment.

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<sup>17</sup> Minutes of the call from 29 March 2022.

<sup>18</sup> Minutes of the call from 13 April 2022; Minutes of the call from 20 April 2022; Minutes of the call from 29 March 2022.

<sup>19</sup> <https://group-mercedes-benz.com/company/news/mercedes-benz-update-battery-strategy.html>

<sup>20</sup> <https://www.volkswagenag.com/en/news/2021/12/volkswagen-group-creates-european-company-for-its-battery-business.html>

<sup>21</sup> Minutes of the call from 13 April 2022; Minutes of the call from 20 April 2022; Minutes of the call from 29 March 2022.

## 5.2. Input foreclosure

### 5.2.1. Ability

- (45) The market investigation also confirmed that the merged entity is unlikely to engage in any input foreclosure strategy due to the fact that (i) the planned absorption of even a significant share of the upstream production by the JV parent's downstream EV LIB production would not affect sourcing patterns of downstream competitors, as already today, all of LGC's production of coated separators is absorbed exclusively by its subsidiary LGES and the JV's activity should instead increase the upstream availability of coated separators after [...] in the EEA; and (ii) there will be sufficient availability of bare and coated separators available for the downstream EV LIB manufacturers, either from European or Asian sources, as illustrated by the worldwide market shares of coated separators by Figure 2 – Wet coated separators - Market shares worldwide

**Figure 2 – Wet coated separators - Market shares worldwide**

Competitors	2019		2020	
	Production Volumes	Market share	Production Volumes	Market share
<b>JV</b>	[...]	<b>0</b>	[...]	<b>0</b>
LGC <sup>(1)</sup>	[...]	0	[...]	0
Toray	[...]	[5-10]%	[...]	[5-10]%
<b>Combined</b>	[...]	<b>[5-10]%</b>	[...]	<b>[5-10]%</b>
<i>Increment</i>	[...]	0	[...]	0
SEMCROP	[...]	[20-30]%	[...]	[20-30]%
AET <sup>(2)</sup>	[...]	[10-20]%	[...]	[10-20]%
Asahi	[...]	[10-20]%	[...]	[10-20]%
SKIET	[...]	[5-10]%	[...]	[5-10]%
Hunan Zhongli	[...]	[0-5]%	[...]	[5-10]%
Sumitomo <sup>(2)</sup>	[...]	[5-10]%	[...]	[5-10]%
W-Scope	[...]	[0-5]%	[...]	[5-10]%
Senior	[...]	[0-5]%	[...]	[0-5]%
Ube	[...]	[0-5]%	[...]	[0-5]%
Taijin <sup>(2)</sup>	[...]	[0-5]%	[...]	[0-5]%
Others	[...]	[10-20]%	[...]	[5-10]%
<b>Total</b>	[...]	<b>100%</b>	[...]	<b>100%</b>

Source: Form CO, Table 10, page 54, based on the Notifying Parties estimates

5.2.2. *Incentive*

- (46) As regards the incentive, due [...] and the rapid development of other EV LIB manufacturers, the thus declining presence of the merged entity on the downstream market of EV LIBs in the EEA would make it unlikely that the merged entity could profitably recoup lost sales from a foreclosing conduct on the downstream markets.

5.2.3. *Impact*

- (47) The market participants contacted in the market investigation indicated no negative impact of the Proposed Transaction for their business or markets<sup>22</sup>.

**6. CONCLUSION**

- (48) For the above reasons, the European Commission has decided not to oppose the notified operation and to declare it compatible with the internal market and with the EEA Agreement. This decision is adopted in application of Article 6(1)(b) of the Merger Regulation and Article 57 of the EEA Agreement.

*For the Commission*

*(Signed)*  
*Margrethe VESTAGER*  
*Executive Vice-President*

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<sup>22</sup> Minutes of the call from 13 April 2022; Minutes of the call from 20 April 2022; Minutes of the call from 29 March 2022.