In the published version of this decision, some information has been omitted, pursuant to articles 24 and 25 of Council Regulation (EC) No 659/1999 of 22 March 1999 laying down detailed rules for the application of Article 93 of the EC Treaty, concerning non-disclosure of information covered by professional secrecy. The omissions are shown thus […].

PUBLIC VERSION
This document is made available for information purposes only.

Subject: State Aid SA.42838 (2016/N) – France – Support to the NEPTHYD tidal energy demonstration plant.

Sir,

1. PROCEDURE

(1) Pursuant to Article 108(3) of the Treaty on the Functioning of the European Union (hereinafter referred to as TFEU), France notified the individual aid to support the construction of a tidal energy demonstration plant at Raz Blanchard. Following pre-notification contacts, the application was submitted electronically on 11 April 2016.

2. DESCRIPTION OF THE MEASURE

2.1. Background and objectives of the project

(2) In line with the long term European energy policy and innovation strategy, France plans to develop tidal energy: a renewable energy source considered variable, but also consistently predictable. For this reason, France notified individual aid supporting a demonstration project for renewable electricity generation from tidal energy sources.

(3) According to France, in order to promote large scale deployment of tidal energy technology, it is necessary to validate the performance and reliability of tidal

Son Excellence Monsieur Jean-Marc AYRAULT
Ministre des Affaires étrangères et du Développement international
Quai d’Orsay 37
F - 75007 - PARIS
technology in real operating conditions. For this reason, France considers necessary to demonstrate construction and long-term operation of a tidal energy park consisting of several generation units. This will allow optimising techno-economics therefore reducing the risks borne by future industrial projects.

2.2 Description of the project

(4) The NEPTHYD tidal energy pilot farm will be located at Raz Blanchard, west of the Cotentin peninsula, in the British Channel. The pilot plant will be composed of four turbines with nominal power of 1.4 MW each, for a total power of 5.6 MW. The turbines will have a rotor diameter of 18 meters and will be installed on the sea floor.

(5) The turbines selected present several innovative features including rotating nacelles, variable pitch blades and submerged power electronics. These innovations are expected to significantly increase the performances of the tidal farm.

(6) The pilot tidal farm will operate for 20 years connected to the French National power grid. The NEPTHYD project is expected to be commissioned by 2019.

(7) The technical objectives of the project are to validate the technology reliability and performance on an industrial scale, adapt and standardise the means and methods of installation and operation, and remove the main technical bottlenecks identified. The project will allow the beneficiary to develop experience on the construction, offshore installation, operation, maintenance and the real economic performances of tidal energy farms.

(8) The economic objectives of the project are to reduce costs and help developing a supply chain for tidal energy. It is expected that the project will deliver cost reductions in both investment and operating costs. In particular cost reductions should allow reaching levelised costs of electricity production in the range of 165 to 227 EUR/MWh. The long term objective is to reduce levelised costs in the range of 88 to 150 EUR/MWh by 2030.

(9) NEPTHYD will produce almost 300 000 MWh of renewable electricity over 20 years, avoiding emissions of 21 000 tonnes of CO2.

(10) The project total investment costs are estimated at […] million EUR while the operating costs are estimated at approximately […] million EUR per year. According to France, the current Technology Readiness Level (TRL) of NEPTHYD's innovative technology is 8, corresponding to a pre-commercial stage of development not yet demonstrated in operational environment. The present project will bring the TRL to 9, by exploiting the technology on an industrial scale. The cumulative capacity of comparable tidal projects deployed to date is approximately 100 MW.
The tidal turbines will be supplied by ALSTOM, while the ENGIE group is the main shareholder of the project. Figure 1 shows the shareholder structure of the companies supporting NEPTHYD.

### 2.3 Selection of the beneficiary

The NEPTHYD project was selected in a tender procedure. The French State commissioned the Agency for Environment and Energy Management (Agence de l’environnement et de la maîtrise de l’énergie, ADEME) to organise a call for expression of interest in order to support construction and operation of a tidal pilot farm.

The tender was carried out on the basis of open and transparent criteria. The eligibility criteria for the tender were:

- Projects should be located on the French territory on one of the suitable sites identified in the tender specification and connected to the national power grid;
- The pilot farm ought to include between 4 and 10 generation units each generating at least 2500 MWh per year;
- The technology proposed should have been already validated with at least 6 months of open-sea operation demonstrated.
The selection criteria of the tender – each of which including several sub-criteria – were:

- Technical content of the technology employed;
- Quality of the financial plan;
- Quality of the project planning;
- Economic impact of the project;
- Quality of the environmental plan;
- Compatibility of the project with the European Regulations (in particular with State aid regulations).

Four projects participated in the tender. The NEPTYD project was selected out of these 4 participants in a two-stage process.

2.4 Budget and duration

The total project investment costs are estimated at […] million EUR. This figure includes 1.84 million EUR of non-eligible costs including: costs incurred in the project development phase and interest charges during the construction phase. The operating costs are estimated at […] million EUR over 20 years of operation including decommissioning costs.

Assuming a discount rate of [9 – 10]%, the estimated Levelised Cost of Electricity (LCOE) of the project is […] EUR/MWh.

The ENGIE group will contribute […] million EUR toward financing the project.

During the expected 20 years lifetime, the project will receive operating aid through a Feed-in Tariff (FiT) of 150 EUR/MWh in 2007 value indexed to inflation. This FiT is the remuneration foreseen for tidal generators by the Decree of 1st March 2007 of the French Commission for Energy Regulation.1

By the expected commission date of the project in 2019, the FiT is expected to be approximately 196 EUR/MWh. Over the 20 years of the project lifetime, the average tariff is expected to be approximately 243 EUR/MWh. Given the expected electricity output of […] MWh over 20 years, the project is expected to receive approximately […] million EUR in operating aid. The duration of the operating aid will not exceed the plant depreciation period.

The project will also receive […] million EUR in investment aid. Two third of the aid, or […] million EUR, will be paid in the form of repayable advances, while one third of the aid, or […] million EUR, will consist of a direct grant.

The repayable advances will be reimbursed according to a risk-sharing principle. For each MW of tidal energy power installed in Europe by 2030, [0,1 – 0,2]% of the repayable advances will be reimbursed. Consequently, the advances will be entirely reimbursed if [400 – 600] MW of tidal power are deployed in Europe by 31 December 2030.

1 Avis de la Commission de régulation de l'énergie du 15 février 2007, JORF du 22 avril 2007, p. 31
Moreover, if the economic performances of the pilot farm exceed the business plan, 30% of the extra profits will be reimbursed.

Taking into account the operating aid and deducting the investment aid from the project capital costs, the estimated Internal Rate of Return (IRR) for the investment is \([9 – 10]\)%.

### 2.5 Aid intensity

France calculated the aid intensity using the Gross Grant Equivalent (GGE) method described in the Commission Decision C(2015) 8202 final concerning case SA.42322 (see also decision C(2008)279 concerning case N 408/2007). This method accounts for the fact that repayable advances might be repaid in part or totally depending on the success of the project. Therefore, the economic advantage to aid beneficiaries is lower in the case of repayable advances than in the case of direct grants. In order to take into account this reduced benefit, the aid intensity of repayable advances can be calculated using a lower amount named the GGE.

The GGE is calculated using the following formula:

\[
GGE = (T_P) \times \sum_{i=0}^{n} \left( \frac{V_i}{(1+i_{ref})^i} \right) + (1 - T_P) \times \sum_{i=0}^{n} \left( \frac{V_i-R_i-([I_{int}+C_i]-(T_{ri}+P_i))}{(1+i_{ref})^i} \right)
\]

where:
- GGE = gross grant equivalent
- \(T_P\) = non-reimbursement rate
- \(V_i\) = payment in year \(i\) (\(i=0\) is the date of the decision)
- \(i_{ref}\) = interest rate applicable at the date of the award
- \(R_i\) = reimbursement made in year \(i\)
- \(I_{int}\) = interest rate
- \(C_i\) = outstanding capital in year \(i\)
- \(T_{ri}\) = royalty rate applied to the fraction of products sold in year \(i\)
- \(P_i\) = price of the product sold in year \(i\)

In the decision in case SA.42322 the Commission concluded that, in the case of Research and Development (R&D) projects, this methodology to calculate the aid gross grant equivalent is compatible with State aid rules.

Applying the calculation method described in recital (27) above, adapted to the NEPTHYD project, the GGE of the repayable advances amounts to […] million EUR. As noted in recital (22) above, the direct grants amount to […] million EUR. Therefore, the notified investment aid amounts to […] million euros in GGE terms.

In order to calculate the eligible costs, France assumed as a counterfactual scenario an investment in a Combined Cycle Gas Turbine (CCGT) plant corresponding to an installed power equal to that of the NEPTHYD project. France estimates the specific investment costs of a CCGT plant at approximately 470 000 EUR/MW. The counterfactual investment for the 5.6 MW NEPTHYD plant is therefore 2.63 million EUR. Excluding 1.84 million EUR of non-eligible costs (see recital (17) above) the eligible costs amount to […] million EUR.
Considering investment aid of […] million euros in GGE terms, the aid intensity is therefore 42.3%. Table 1 outlines the aid intensity calculation.

Table 1: Project aid intensity.

<table>
<thead>
<tr>
<th></th>
<th>Estimated project costs (M€)</th>
<th>Costs CCGT (M€)</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Investment costs</td>
<td>[…]</td>
<td>2.63</td>
<td>[…]</td>
</tr>
<tr>
<td>Eligible costs</td>
<td>[…]</td>
<td>[…]</td>
<td></td>
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<tr>
<td>Gross Grant Equivalent</td>
<td>[…]</td>
<td>[…]</td>
<td></td>
</tr>
<tr>
<td>Aid intensity (%)</td>
<td></td>
<td>42.3%</td>
<td></td>
</tr>
</tbody>
</table>

2.6 Reporting, Transparency and Cumulation

France will ensure that detailed records regarding all measures involving the granting of aid are maintained. Those records will be kept for the duration of the project plus an additional period of ten years, including all information relevant to demonstrating that the terms of the project have been complied with.

Detailed information about the project funded will be published on a comprehensive website in order to comply with the provisions of section 3.2.7 of the Guidelines on State aid for environmental protection and energy 2014-2020 (EEAG).².

The project is not eligible for any other type of investment or operating aid other than those described in Section 2.4 above.

2.7 National regulatory framework

The measure will be enacted by the French authorities through a Decree-Law. Legal basis for that decree is the law n 2013-1278 of 29 December 2013.

3. ASSESSMENT OF THE MEASURE:

3.1 Existence of aid

A measure constitutes State aid in the meaning of Article 107 (1) TFEU if it is "granted by a Member State or through State resources in any form whatsoever which distorts or threatens to distort competition by favouring certain

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² OJ C 200 of 28.06.2014.
undertakings or the production of certain goods [...] in so far as it affects trade between Member States."

(37) The investment aid will be granted by the ADEME. The ADEME is a public company under the control of the State. The French authorities acknowledge that the investment aid is imputable to the French State.

(38) The notified measure will provide a selective advantage to the beneficiary selected by the tender (see recital (10) for a description of the project's shareholders structure). The notified measure will allow the beneficiary to receive an investment subsidy and compensation for the electricity sold beyond that which it would obtain on the French electricity market. The notified measure will therefore confer an economic advantage to the beneficiary.

(39) Electricity is widely traded, including between Member States, and therefore the notified measure is likely to distort the competition on the electricity market and affect trade between the Member States. In this particular case, France is interconnected with the United Kingdom, Belgium, Germany, Italy and Spain. The measure is therefore liable to affect electricity trade between France and neighbouring Member States.

(40) In conclusion, the notified measure constitutes State aid in the meaning of Article 107(1) TFEU.

3.2 Legality

(41) The French authorities did not put the aid measure into effect before a final Commission decision. Thus, France has complied with the stand-still obligation set out in Article 108(3) TFEU.

3.3 Compatibility under the Guidelines on State aid for environmental protection and energy 2014-2020

(42) The Commission notes that the notified measure aims at providing investment aid to the generation of electricity from renewable sources. As it regards support for electricity from renewable sources, the notified measure falls within the scope of the EEAG.

(43) The Commission has therefore assessed the notified measure based on the compatibility provisions for aid to energy from renewable sources set out in sections 3.2 and 3.3 of the EEAG.

3.3.1 Objective of common interest

(44) The aim of the notified aid measure is to help France to achieve the long term climate change and energy sustainability targets set by the EU as part of its EU 2020 strategy. The measure will help France to diversify the portfolio of renewable energy technologies available on the market. In line with paragraphs 30 and 31 of the EEAG, France defined the objective of the measure and explained the expected contributions toward ensuring a competitive, sustainable and secure energy system.

(45) The Commission considers that the notified aid measure is aimed at an objective of common interest in accordance with Article 107(3)(c) of the Treaty.
3.3.2 Need for State aid, appropriate instrument and incentive effect

(46) In paragraph 107 of the EEAG the Commission acknowledges that "under certain conditions State aid can be an appropriate instrument to contribute to the achievement of the EU objectives and related national targets".

(47) Pursuant to paragraph 116 of the EEAG, in order to allow Member States to achieve their targets in line with the EU 2020 objectives, the Commission presumes the granting of State aid is an appropriate instrument to promote energy from renewable sources, provided that all other conditions set therein are met.

(48) In line with paragraph 49 of the EEAG, the incentive effect occurs if the aid induces the beneficiary to change its behaviour towards reaching the objective of common interest which it would not do without the aid.

(49) The French authorities demonstrated that the LCOE of tidal energy technology would be higher than the expected market price (see recital (18) above). Without the aid and under normal market conditions, the return on the investment for tidal energy projects would be negative. The Commission concludes that without the aid the project would not be financially viable. The aid therefore causes the beneficiary to change its behaviour and invest in the renewable project.

(50) The Commission notes that the applicants were required to submit an application in order to participate in a transparent selection process. Furthermore, work on the project did not start before the application for aid.

(51) Consequently, the Commission considers that the aid for the notified projects is necessary, granted by means of an appropriate instrument and provides the necessary incentive effect to address the objective of common interest.

3.3.3 Proportionality

(52) According to paragraph 69 of the EEAG, environmental aid is considered to be proportionate if the aid amount per beneficiary is limited to the minimum needed to achieve the environmental protection objective aimed for.

(53) The Commission assessed proportionality of the aid under the provisions of Sections 3.2 and 3.3.1 of the EEAG for the investment aid and of Section 3.3.2.1 for the operating aid.

(54) The Commission notes that the project was selected in a transparent and competitive tender. Moreover, the Commission notes that the IRR for the project (19 – 10)%, as described in recital (25) above) is in line with previously approved ocean energy projects. ³

(55) The Commission further notes that with a starting TRL of 8, the technology is currently still in a pre-commercial stage of development and, to date, very little deployment of comparable tidal energy technology took place. The project appears to be a first of a kind in that it intends to exploit tidal energy on an industrial scale and therefore bring the TRL to 9. The Commission concludes that the NEPHTYD project can be considered a demonstration project.

³ See for example decision C(2015) 2680 final for case SA.40227 (decision not published yet).
For these reasons - that are strictly specific to this project - it is possible to apply the GGE methodology that has been deemed appropriate for R&D aid in Commission Decision C(2015) 8202 final concerning case SA.42322. As described in recital (31) above, when calculated using the GGE, the aid intensity of the investment aid is 42.3%. This figure is below the maximum aid intensities specified in Annex 1 to the EEAG. The Commission concludes that the measure complies with the provisions of paragraph 77 of the EEAG.

Considering the exceptions for demonstration projects set out in paragraph 125 of the EEAG, the Commission concludes that, for the NEPTHYD project, the operating aid in the form of a FIT is compatible with the provisions of section 3.3.2.1 of the EEAG.

Taking into account the investment and operating aid and the estimated investment and operating costs of the project, the French authorities calculated an IRR of approximately [9 – 10]% for the project. France considers such rate of return appropriate since the technology is in the demonstration phase of development and considerably riskier than a comparable investment using conventional technology.

The Commission considers that France has sufficiently demonstrated that the IRR for the project (after deducting investment aid, as required by paragraph 129 of the EEAG) is not exceeding a normal return for this type of projects and notes that this rate is consistent with the ones previously approved by the Commission for non-conventional ocean energy technology projects. Finally, the Commission notes that, in line with paragraph 129 of the EEAG, aid is only granted until the plant has been fully depreciated (see recital (21) above).

In light of the above and without prejudice to the assessment of the 2007 Decree of the French Commission for Energy Regulation (see recital (20) above), the Commission concludes that the aid granted to the NEPTHYD project satisfies the conditions in sections 3.2.5 and 3.3.2.1 of the EEAG and is, therefore, proportionate.

### 3.3.4 Distortion of competition and balancing test

According to paragraph 90 of the EEAG, the Commission considers that aid for environmental purposes will by its very nature tend to favour environmentally friendly products and technologies at the expense of other, more polluting ones. Furthermore, the effect of the aid will in principle not be viewed as an undue distortion of competition since it is inherently linked to its very objective.

The Commission notes that the amount of electricity generated and the market share of the proposed project are negligible compared to the size of the French electricity market.

In light of what set forth above, and having regard for the provisions of paragraph 108 of the EEAG, the Commission considers that the overall balance of the proposed scheme is positive and the measure does not have undue distortive effects on competition and trade.

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4 For example in the decision for case SA.40227 – Aid to the Windfloat project (decision not published yet).
3.3.5 Transparency

(64) Under paragraph 104 of the EEAG, Member States have the obligation to ensure the transparency of the aid granted, by publishing certain information on a comprehensive State aid website. In line with paragraph 106 of the EEAG, Member States are requested to comply with this obligation as of 1 July 2016.

(65) France committed to comply with the transparency requirements in paragraphs 104 – 106 of the EEAG (see recital (33) above).

3.3.6 Conclusion with regard to the compatibility of the measure

(66) In light of the above, the Commission considers that the notified investment aid pursues an objective of common interest in a necessary and proportionate way without unduly affecting competition and trade, and that therefore the aid is compatible with the internal market on the basis of the EEAG.

4. CONCLUSION

The Commission has accordingly decided:

not to raise objections to the aid on the grounds that it is compatible with the internal market pursuant to Article 107(3)(c) of the Treaty on the Functioning of the European Union.

If any parts of this letter are covered by the obligation of professional secrecy according to the Commission communication on professional secrecy and should not be published, please inform the Commission within fifteen working days of notification of this letter. If the Commission does not receive a reasoned request by that deadline, France will be deemed to agree to the publication of the full text of this letter. If France wishes certain information to be covered by the obligation of professional secrecy, please indicate the parts and provide a justification in respect of each part for which non-disclosure is requested.

Your request should be sent electronically in accordance with Article 3(4) of Commission Regulation (EC) No 794/2004,

Yours faithfully
For the Commission

Margrethe VESTAGER
Member of the Commission