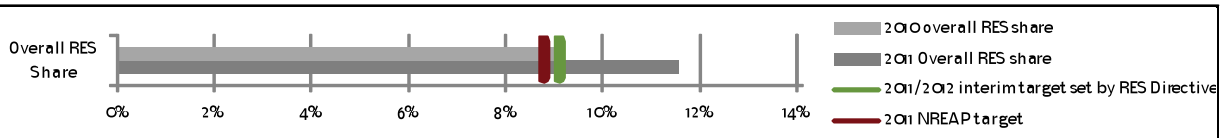
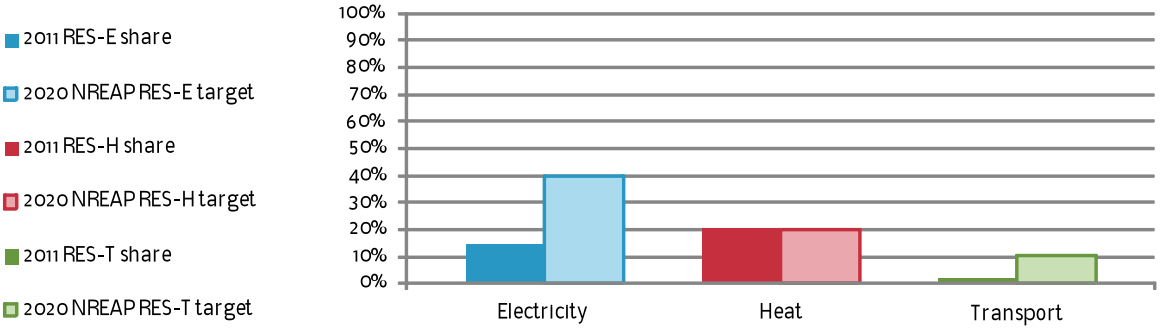
E. GREECE

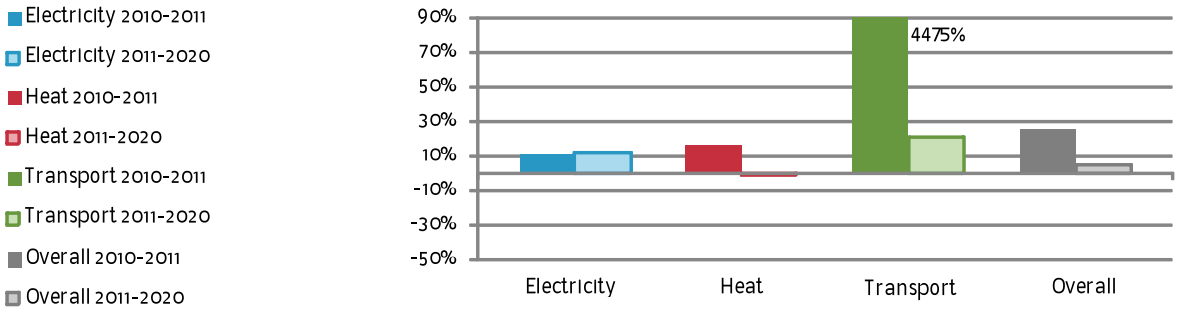
1. NATIONAL DEVIATIONS REPORT





2011 actual share of RES compared to 2020 target share in corresponding sectoral gross final energy demand

	Electricity	Heat	Transport	Total
2011 actual share of RES in sectoral gross final energy demand	14.6%	20.1%	1.8%	11.6%
2011 NREAP target	15.7%	15.7%	3.3%	8.8%
2011/2012 interim target set by RES Directive	-	-	-	9.1%
2020 NREAP target	39.8%	19.7%	10.1%	18.0%
Percentage of sector consumption in total final energy consumption in 2011	27%	33%	39%	100%
2011 Production [ktoe]	781	1,354	108	2,243
2010 Production [ktoe]	709	1,099	130	1,937
2005 Production [ktoe]	551	1,075	0	1,625
2020 NREAP target production [ktoe]	2,345	1,908	634	4,870
Deviation [%] of actual from planned share in 2011	-7.29%	28.11%	-44.40%	31.44%



RES growth rates achieved from 2010 to 2011 compared to RES growth rates required from 2011 to 2020 by sector

- Greece has achieved its 2011/2012 interim target and the 2011 NREAP target due to a positive deviation in the heat sector share.
- The overall growth rate in the RES sector from 2010-2011 would be more than high enough to achieve the 2020 target if it could be maintained. This is mainly due to a strong growth trend in the heat sector. The extremely high growth rate in the transport sector may be due to data reporting inconsistencies. Growth in the electricity sector was just slightly too low.

2. NATIONAL BARRIERS REPORT

The Greek RES-E Sector
Support scheme

In Greece, electricity generation from renewable sources has been supported during the past fifteen years through various versions of a Feed-In Tariff system concept. In addition, RES-E projects have been eligible for capital subsidies and /or tax exemptions (RES LEGAL Europe, 2012[44]).

Law No. 3468/2006 and its amendments set for the first time an integrated set of rules for guaranteed Feed-In Tariffs. Plant operators are contractually entitled against the Grid Operator/ Electricity Market Operator to the payment of electricity exported to the grid. The Grid Operator is obliged to enter into these contracts. The amount of Feed-In Tariff varies for each electricity generation technology. Based on a regulation issued in the Greek Government Gazette (FEK 1079/2009) the support scheme has been expanded to incentivise electricity generation from small PV installations (capacity of 10 kW or less) through a feed-in tariff, which is deducted from the consumers' electricity bill) (RES LEGAL Europe, 2012[45]). During 2012, Feed-In-Tariffs for PV installations have been revised (reduced) twice, while since November 2012 a retroactive levy on the yearly turnover of all operating RES plants has been entered into force.

Apart from the Feed-In-Tariff mechanism, non-PV RES projects may come under the provisions of Law No.3098/2011 (Investment Law) and can be eligible for a subsidy and or tax exemption scheme. (RES LEGAL Europe, 2012[46]).

Barriers to RES-E

Especially after the amendment of Law No. 3468/2006[47], the legal framework in Greece became more favourable for the development of the renewable energy sector- especially for PV installations. In particular, highly attractive PV Feed-In-Tariffs set the stage for the ensuing rapid development of PV installations (RES Integration, 2011)[48]. Nevertheless, the current financial crisis created a new unfavourable environment for the development of renewable energy electricity. Project financing became extremely hard to get. Subsequent revisions of Feed-In-Tariffs, mainly for PV installations, along with the inability of the Electricity Market Operator (LAGIE)[49] to remunerate the plant operators and the unstable economic environment deteriorated the prospects of further growth.

Apart from that, other barriers (administrative/licensing/grid connectivity/public acceptance, etc.), which originated before the favourable amendment of Law No.3468/2006 remained and in combination with the new barriers which emerged during the financial crisis, aggravated the situation.

<u>Unstable Financial and Economic Development</u>

The current financial crisis constitutes the main cause for the emergence of new barriers concerning the development of the renewable electricity sector.

The barriers caused by the unstable economic financial and economic environment can be further divided into two large groups. The first one contains the effects on the viability/ sustainability of the current support mechanism for renewable electricity production. The second one has to do with the negative effects the current financial situation induces on the financing of renewable electricity projects.

The **uncertainties concerning the Feed-In-Tariff regime** in Greece is the major problem renewable electricity sector is facing. Sudden and/or retroactive revisions of the Feed-In-Tariffs surely create an insecure environment for new investments. Investors with projects under development are discouraged and may abandon their investments since such uncertainties are going to lead to the lowering of the profitability of such projects.

[44] http://www.res-legal.eu/search-by-country/greece/
[45] Ibid.
[46] Ibid.
[47] Law No.3851/2010, "Accelerating the development of Renewable Energy Sources to deal with climate change and other regulations addressing issues under the authority of the Ministry of Environment, Energy and Climate Change". Available at http://www.ypeka.gr/LinkClick.aspx?fileticket=qtiW90JJLYs%3d&tabid=37
[48] http://www.eclareon.eu/sites/default/files/greece_-_res_integration_national_study_nreap.pdf
[49] Greek: Λειτουργός Αγοράς Ηλεκτρικής Ενέργειας, http://www.lagie.gr/

The dramatic impact of sudden revisions of the Feed-In-Tariff mechanism can be illustrated through the following example: if an investor had planned to build a PV installation >100 kW in 2011 and was expecting that the PV installation would be connected to the grid in August 2012, it was expected to receive a Feed-In-Tariff of € 314.27/ MWh[50]. However, the Feed-In-Tariff at the beginning of 2012 for the same installation was reduced to € 271.64/ MWh[51]. Six months later another reduction was applied and the Feed-In-Tariff was reduced further to € 180/ MWh[52]. All in all, from the initial point of the investment until the time the PV installation was theoretically connected to the grid, the Feed-In-Tariff lost 57% of its value.

As far as the impact of retroactive changes is concerned it should be noted that with the new law No. 4093/2012 ("Approval of the Medium-Term Fiscal Strategy Framework 2013-2016 - Urgent Measures for Application of Law 4046/2012 and the Medium-Term Fiscal Strategy Framework 2013-2016") a special solidarity levy has been applied on the yearly turnover of all operating renewable electricity installations for 3 (2+1) years (25%-30% of the yearly turnover for PV installations and 10% for other renewable energy sources[53]). This will have a devastating effect on all RES installations but it will affect much more wind, small hydro and biomass projects, which have been operating with very low returns.

Apart from the uncertainty of the current Feed-In-Tariff mechanism, there is also **concern over the liquidity of the National Electricity Market Operator (LAGIE)**. The Electricity Market Operator (LAGIE) was established as a public entity under the provisions of Law No. 4001/2011 (known as "Energy Law")[54].

The Electricity Market Operator (LAGIE) is responsible for clearing the daily electricity market and for paying the renewable electricity producers on a monthly basis according to their contractual Feed-In-Tariffs and the electricity they have provided to the national electrical system. This is done through a Special Account (Art.40 Law No.2773/ 1999), set up solely for that reason (RES Integration, 2011).

LAGIE presented a deficit from the time it was established and by the end of 2011 it had a deficit of € 195 million[55]. Quickly it became apparent to all major stakeholders that LAGIE would be unable to remunerate the renewable electricity producers. Although the Ministry of Environment, Energy and Climate Change called a stakeholder consultation on the viability of the financing mechanism (ΥΠΕΚΑ, 2012), LAGIE has been paying off renewable electricity producers with a five to six months delay[56].

The Electricity Market Operator has predicted that its deficit will amount to €340 million at the end of 2012 and €500m at the end of June 2013. Fears that LAGIE would be unable to pay off the Feed-In-Tariffs to the renewable electricity producers led to imposition of the aforementioned retroactive levy on all operating RES projects.

The massive, uncontrolled and front loaded (vis-a-vis the Greek NREAP PV target for 2020) connection of PV plants to the grid has been blamed as a major cause of the instability[57]. Major renewable electricity market stakeholders also point to credible studies (IOVE, NTUA, et al), which show that 60% of the Special Account finances indirectly fossil fuels in Greece. The recession-driven general lack of liquidity has also had a pronounced effect on the ability of the Market Operator to clear the electricity market transactions.

Thus, as long as these problems remain, investments in renewable energy in Greece will continue to be rendered insecure and very risky.

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[50] Law No.3851/2010, "Accelerating the development of Renewable Energy Sources to deal with climate change and other regulations addressing issues under the authority of the Ministry of Environment, Energy and Climate Change". Available at http://www.ypeka.gr/LinkClick.aspx?fileticket=qtiW90JJLYs%3d&tabid=37

[51] Greek: Αριθμ. Υ.Α.Π.Ε./Φ1/οικ.2262,"Τιμολόγηση ηλεκτρικής ενέργειας που παράγεται από φωτοβολταϊκούς σταθμούς". Available at http://www.ypeka.gr/LinkClick.aspx?fileticket=JzS4WApZIMo%3d&tabid=555&language=el-GR

[52] Greek: Αριθμ. Υ.Α.Π.Ε./Φ1/2301/οικ.16933, "Τροποποίηση της απόφασης με αριθμό Υ.Α.Π.Ε./ Φ1/2262/ 31.1.2012 (Β΄97) σχετικά με την τιμολόγηση ηλεκτρικής ενέργειας που παράγεται από φωτοβολταϊκούς σταθμούς". Available at http://www.ypeka.gr/LinkClick.aspx?fileticket=Ru%2btfEs6Pao%3d&tabid=555&language=el-GR

[53]Greek: Νόμος 4093/2012: Έγκριση Μεσοπρόθεσμου Πλαισίου Δημοσιονομικής Στρατηγικής 2013-2016 - Επείγοντα Μέτρα Εφαρμογής του ν. 4046/2012 και του Μεσοπρόθεσμου Πλαισίου Δημοσιονομικής Στρατηγικής 2013-2016. Available at http://www.forin.gr/articles/article/7488/nomos-4093-2012-egkrish-mesoprothesmou-plaisiou-dhmosionomikhs-strathgikhs-2013-2016-epeigonta-metra-efarmo%C2%ADghs-tou-n-4046-2012-kai-tou-mesoprothesmou-plai%C2%ADsiou-dhmosionomikhs-strathgikh

[54] Greek: Νόμος 4001/2011, "Για τη λειτουργία Ενεργειακών Αγορών Ηλεκτρισμού και Φυσικού Αερίου, για Έρευνα, Παραγωγή και δίκτυα Μεταφοράς Υδρογονανθράκων και άλλες ρυθμίσεις". Available at http://www.ypeka.gr/LinkClick.aspx?fileticket=9rVkIH6aN2E%3D&tabid=506&language=el-GR

[55] http://www.greenbusiness.gr/20411/%CF%83%CF%80%CE%B5%CF%86-%CF%84%CE%BF-%CE%AD%CE%BB%CE%BB%CE%B5%CE%B9%CE%BC%CE%BC%CE%B1-400-%CE%B5%CE%BA%CE%B1%CF%84-%CE%B5%CF%85%CF%81%CF%8E-%CF%84%CE%BF%CF%85-%CE%BB%CE%B1%CE%B3%CE%B7%CE%B5/

[56] http://www.energypress.gr/news/PASYF:-Poy-phgan-ta-lefta-toy-LAGHE

[57] http://www.energypress.gr/news/Diapistwsh-sok-toy-LAGHE:-Para-ta-metra-to-elleimma-diplasiazetai-to-2014

Apart from the aforementioned barriers, the **financing of renewable electricity projects could not be left untouched by the current economic crisis**. Financial institutions have minimized support for renewable electricity projects and especially Greek renewable electricity producers are excluded from loans by Greek and international financial institutions. Consequently the costs for development and construction will be considerably higher.

In addition, a new draft bill by the Ministry of Environment, Energy and Climate Change foresees that investors are obliged to submit to the appropriate State Authorities expensive letters of guarantee, in order to retain a RES project connection offer and/or to issue a new one. If approved, this regulation in conjunction with the current financial situation can be expected to impede gravely any future investment in renewable electricity in Greece[58].

Frequent Changes of the Legislative Framework

Frequent changes of the legislative framework, administrative barriers and the bureaucracy involved in the grid connection process have been long standing problems for the development of renewable electricity in Greece.

Changes in the legislative framework can lead to significant delays in the development or even the cancelation of projects and will eventually bring forward the need for redesigning under a new financial and business environment.

It should be noted that this specific problem is caused mainly by the diversified political views that are applied by the Greek Political Parties and consequently by the frequent change of Minister of Environment, Energy and Climate Change. Characteristically, as it was mentioned in the previous chapter, in the past two years there have been three revisions of the Feed-In-Tariff and a number of amendments concerning the licensing procedure.

Most affected by the administrative difficulties are wind energy and small hydro. The administrative procedure for a wind power installation in Greece can take up to 5 years for example (AEON, 2010; Wind Barriers 2010). Nevertheless, it should be noted that this problem has been acknowledged by the authorities and this is why several departments within the Ministry of Environment Energy and Climate Change were merged. In accordance with the RES Spatial Planning law of 2008[59], the Ministry prioritizes renewable energy projects over other land uses and determines restricted as well as priority areas. These modifications aim to improve the complicated licensing procedure, that includes around 20 different authorities and sub-permits, whereas it used to be around 40 (REPAP 2020, 2011). However there are still some concerns over the acceleration of the licensing procedure by the relevant stakeholders.

The same can be applied to PV installations (PV Legal, 2010) as the amendment of Law No. 3468/2006 facilitated the connection process (RES Integration, 2011). Nevertheless, that facilitation created a "bottleneck" effect as the regional and national authorities did not have the capacity to evaluate such a large number of applications (RES Integration, 2011).

Apart from that, it should be underlined, that due to the fact that many national and (mainly) regional authorities are involved in the licensing process, some of them lacking not only the necessary capacity but also environmental awareness. In addition, due to the frequent changes of the legislative framework, regional and national authorities are not able to interpret the new legislation adequately[60]. Consequently, licensing procedures delays and applications are not examined at all. This of course leads to the cancelation of projects and will finally bring forward the need for redesigning under a new financial and business environment.

Infrastructure Development

Another persistent obstacle for the development of renewable electricity is grid development, or more generally the **lack of infrastructure development**.

[58] Greek: Σχέδιο νόμου «Ρυθμίσεις θεμάτων Ανανεώσιμων Πηγών Ενέργειας (Α.Π.Ε.) και άλλες διατάξεις». Available at: http://www.opengov.gr/minenv/wp-content/uploads/downloads/2012/12/Rythmiseis-thematon-ape-kai-alles-diataxeis_Draft-07_clean-me-diorthoseis.pdf

[59] Greek: Απόφαση Αριθμ. 49828, Έγκριση ειδικού πλαισίου χωροταξικού σχεδιασμού και αειφόρου ανάπτυξης για τις ανανεώσιμες πηγές ενέργειας και της στρατηγικής μελέτης περιβαλλοντικών επιπτώσεων αυτού. Available at http://www.ypeka.gr/LinkClick.aspx?fileticket=zkMN5DrZKKo%3D&tabid=513

[60] This is why it was proposed that only a legal instance i.e. the General Secretariat for Energy of the Ministry of Energy and Climate Change should be the sole responsible for interpreting RES related legislation so as to ensure that laws are implemented uniformly (Papastamatiou, 2012).

There exist many areas in the Greek territory that are currently unable to exploit mainly their wind potential. Characteristically, the Aegean islands, dispersed on the Aegean Sea, are not interconnected to the central continental grid. Apart from that, there are also other areas where grid development works are needed but they are not realised. As a consequence, those areas are characterised as congested and no further renewable energy plants can be connected to the grid (AEON, 2010). Furthermore there is the fear amongst investors that once a license is granted, no grid access will remain.

Although there is a Study for the development of Greek Transmission Grid 2010-2014 (MASM)[61], which includes all the necessary grid development works until 2014 (RES Legal Europe, 2012), it is argued that the lack of infrastructure development is caused by the insufficient progress of unbundling in Greece (Law No. 4001/2011) which delayed investments in interconnections and further grid development projects. In addition due to the financial situation and the morphology of the country, it is difficult to carry out such large investments.

An example that confirms the aforementioned argument is the tender for the interconnection of a group of Aegean Islands to the continental electricity grid, a project that is also co-financed by the European Union[62]. There were at first two bids by two joint ventures. Even though one bid was firstly accepted, the tender was annulled as budgetary differences emerged and it is expected to open again at the beginning of 2013[63].

Awareness Raising

Lack of knowledge on green energy and environmental awareness, diversified policy and attitude on RES which originates from the different political disciplines and local community disputes can be seen as the main causes of that barrier for the development of renewable electricity.

There are for example a significant number of appeals for the annulment of renewable electricity licenses to the State Council mainly for wind parks. As a consequence, many projects are cancelled or delayed. The negative stance of local communities should not be underestimated as in some cases it has created a long standing negative attitude towards renewable electricity. This is the case for geothermal energy in Greece. Milos, an island on the Aegean Sea, is one of few areas in Greece with a significant exploitable geothermic potential for power production. The Public Power Corporation initiated the process of installing a geothermal electricity station. However, due to careless handling and to local interest conflicts, the local community formed a very negative attitude towards geothermal energy and every time the project reinitiates the local community is opposed to it.

It should be noted that the negative attitude towards renewable energy is not only limited to the local communities but also to the public sector, namely the local and regional authorities engaged in the licensing procedure. It is important at first to convince and inform those stakeholders about the positive effects of renewable energy before engaging in awareness raising activities for the local communities.

[61] Greek: Μελέτη Ανάπτυξης Συστήματος Μεταφοράς 2010-2012 (ΜΑΣΜ). Available at http://www.admie.gr/fileadmin/user_upload/Files/masm/masm_2010-2014-RAE.pdf

[62] Greek: Διασύνδεση των Κυκλάδων με το Ηπειρωτικό Διασυνδεδεμένο Σύστημα Υψηλής Τάσης (ΥΤ). Available at http://www.espa.gr/el/pages/ProclamationsFS.aspx?item=1829

[63] Greek: Άγονος ο διαγωνισμός για τη διασύνδεσης των Κυκλάδων. Available at http://www.capital.gr/Articles.asp?id=1669741

The Greek RES-H Sector

Support scheme

RES heating and cooling sector is supported by a tax relief, a number of national programmes and the new investment law (RES LEGAL Europe, 2012[64]).

Tax relief is granted for the installation of renewable boilers or the replacement of existing fossil heating boilers with renewable ones. The Programme "Exoikonomisi kat'oikon" supports measures to increase the energy performance of residential buildings through the provision of interest-free loans and subsidies for the installation of RES-E and RES-H systems and energy-saving measures. Apart from that, the new investment law (Law No. 3908/2011) supports the installation of RES- H plants (RES LEGAL Europe, 2012[65]).

Although Law No. 3908/2011 (Investment Law) states explicitly that PV projects are not eligible for capital subsidies or tax relief support, such support may be provided to other RES projects, especially under the provisions of Art. 6(General Investment Plans). Art. 6 distinguishes three types of General Investment Plans: General Entrepreneurship, Technological Development and Regional Convergence plans. RES projects are eligible if they come under one of the three categories mentioned above (RES LEGAL Europe, 2012[66]).

Barriers to RES-H

Unstable Financial and Economic Development

As it was mentioned in the previous chapter, **financial institutions have minimized support for renewable projects** in Greece. Such projects have serious difficulties in securing loans from Greek and international financial institutions. This is expected to have a severe effect on the development of RES-H projects in Greece, all the more so as the specific sector is less developed in comparison to the renewable electricity one.

Unclear Support Framework

The existing support schemes for RES-H, mainly the Investment Law, lack in clarity concerning relevant eligible expenditures.

The Programme "Exoikonomo kat' oikon" can be seen as an exception but it is limited to residential buildings and aims primarily at improving energy efficiency. In this context the poor performance concerning the exemplary role of public buildings (REPAP 2020, 2011) undermines the success of such programmes, as public authorities lack the environmental awareness to implement the obligation stated by the Law No 3661/ 2008[67].

[64] http://www.res-legal.eu/search-by-country/greece/
[65] Ibid.
[66] Ibid.
[67] Greek: Νόμος 3661/2008, Μέτρα για τη μείωση της ενεργειακής κατανάλωσης των κτιρίων και άλλες διατάξεις. Available at http://www.ypeka.gr/LinkClick.aspx?fileticket=yJy1TVyRqoo%3d&tabid=338&language=el-GR

The Greek RES-T Sector

Support scheme

Greece is using a quota system for biofuels. Law No. 3054/2002 obliges producers and distributors of petrol and diesel to blend their fuels with a certain amount ("quota") of biofuels. The mandatory quota is set by ministerial resolution and is reviewed every year (RES LEGAL Europe, 2012).

Barriers to the transport sector

Unstable Financial and Economic Development

Here again, the **limited support of financial institutions for renewable projects** and especially the exclusion of Greek investors from loans by Greek and international financial institutions is one of the main problems for the development of RES T in Greece. It is to be noted that with the exception of the development of biodiesel plants, no other aspect of the RES-T sector has been included in recent energy planning at the national level.

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comprehensive science. For example the International Food Policy Research Institute (IFPRI) model used to calculate the factors fails to take into account certain agricultural realties and animal feed co-products. If fuel suppliers are required to report against the factors as they stand now, they will be seen to be producing a product that is against the aims of the RED. This in turn will cause significant damage to the public perception of biofuels in the EU (REA 2012).

Proposed double/quadruple counting

According to REA (2012), both first and second (advanced) generation biofuels are struggling to obtain project finance due to perceived market and technology risks. "Although the proposal for double or quadruple counting for second generation biofuels is welcomed, it will not help to get projects financed as the mechanism is yet untested and the value uncertain. Without a stable market beyond 2020 and a timeframe that allows returns to be made in line with rational business plans, technology developers and potential investors will not be willing to commit to the market. Lacking longevity and stability, even quadruple counting is unlikely to bring forward the necessary investment".

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