# New RES E Support Scheme in Greece
## Investment Opportunities & Challenges

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# Introduction

- Greek Parliament passed the long awaited new national support scheme for electricity from renewables and cogeneration of heat and power by virtue of Law 4414/2016 that came into effect on 9 August 2016 (**Law 4414**).
- The law was enacted following **extensive consultation** by the Ministry of Environment & Energy with market stakeholders and the European Commission which began in early 2016.
- The new support scheme extensively reforms the existing support scheme in line with the European Commission's Guidelines on State aid for environmental protection and energy for the period 2014 – 2020 (**Guidelines**).
- It aims at promoting **better integration of renewables** into the national electricity market at an **optimum level of cost** and benefit for society whilst **exploiting by priority the national renewable potential** in order for Greece to **meet its 2020 renewable electricity generation target** (i.e. at least a 40 per cent share of gross electricity consumption).
- The scheme was finally approved by the European Commission in November 2016. Link to DG COMP's decision: http://ec.europa.eu/competition/elojade/isef/case_details.cfm?proc_code=3_SA_44666



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# Main features of the new scheme

## Feed-in premiums and market participation

- Two overarching principles: (a) compulsory participation of new renewable electricity (**RES E**) projects in the wholesale electricity market, subject to balancing responsibilities; and (b) revenue support on the basis of cost reflective, market-based operating aid.
- The feed-in tariff-based (**FiT**) scheme, applicable with small variations since 1994, is replaced by a technology-specific sliding scale feed-in premium (**FiP**).
- The FiP (in €/MWh) is added as a **premium** to the revenues received by generators through their participation in the wholesale market, topping up revenues in order for the relevant operating aid to reach an acceptable level of support measured against a technology-specific reference tariff (**RT**). RTs have been set on the basis of the levelised cost of electricity (**LCOE**) from each renewable technology.
- The RTs will be initially regulated for all technologies but from this year (**2017)** onwards will be set **through competitive bidding processes** at least for the prevailing technologies (i.e. wind and solar).
- **Compensation** for each technology should be **up to the level of the applicable RT**, so in case the market value of each renewable technology is in excess of the applicable RT, the excess will be returned to the special account kept by the relevant market operator.

# Main features of the new scheme (continued)

## Scope of application and exemptions

- In the **interconnected system** (i.e. mainland Greece and islands connected to the HV grid), the new scheme is applicable only to **new projects** on the basis of a new **FiP contract** entered into with LAGIE.
- In 2016, the FiP contracts were available to all new projects fulfilling certain licensing criteria, while from this year onwards, are only available to any new projects successfully participating in the forthcoming competitive bidding processes (**auctions**).
- In practice, the FiP contract is essentially a standardised contract for differences (**CfD**) against the RT applicable to each technology after taking into account the generators' revenues from the wholesale market.
- New projects in the **non-interconnected islands (NIIs)** continue benefiting from **FiT based contracts** entered into with DEDDIE, as long as these islands are either not interconnected with mainland Greece or do not have a fully operational daily electricity market. In the event of interconnection or emergence of an effective daily electricity market, the signed FiT based contracts **will be converted** to FiP contracts for the rest of their term.
- **Small scale renewable energy projects** (i.e. wind projects below 6MW and all other RES projects but solar PV) **are probably going to be exempted** from the competitive bidding processes (auctions) scheme. These projects enter into a **FiT or a FiP based** contract depending their capacity.

# Main features of the new scheme (continued)

## Term and content of FiP Contracts

- The term of the new FiP contracts is for **20 years** for all RES projects, other than solar thermal power plants which will enjoy a 25 year term.
- The form, the content and the details of such new standard contracts have been determined by ministerial decisions issued in December 2016.
- The new FiP contracts are notably based on previous FiT based PPAs that were available until the end of 2015. Scope of assignment of claims has been expanded but there are still bankability issues for International Financial Institutions (IFIs), such as:
  - No provision for direct agreement with Lenders;
  - Regulatory / licensing constraints for lenders' step–in rights;
  - Lack of predetrmined calculation of damages and compensation upon termination or disruption of the off-take at no fault of the generator;
  - Lack of change in law compensation process;
  - Lack of expert determination & arbitration processes.



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# Main features of the new scheme (continued)

**Transitional period for projects with PPAs (grandfathering)**

- Operating projects and projects still under development which have entered into a standard PPA with LAGIE (or DEDDIE in the NIIs) **before 1 January 2016** will continue receiving operating aid under the previous FiT support scheme.
- However, wind, small hydro, biomass and biogas projects under development should have been constructed and grid connected by **31 March 2019** and all other RES technologies by **31 December 2017**.
- If not, they will have to switch to the new support scheme and sign the new FiP Contracts, but will be excluded from any competitive bidding process as long as they are constructed and grid connected **by 30 September 2019**.
- Above deadlines were legislated quite recently (Law 4467/2017) and extend the initial ones provided under Law 4414. These new deadlines have not been cleared by the European Commission yet.

# Main features of the new scheme (continued)

## Participation in the daily electricity market

- FiP contracted RES power plants will **participate in the market** (either directly or through aggregators, including one of last resort to be nominated by ministerial decision).
- They will **submit zero priced energy offers** on an hourly basis and will be subject to the **clearance and settlement procedures** for day-ahead electricity market transactions which now apply to merchant power plants and electricity imports.
- They will be subject to **balancing responsibilities** pursuant to the System Operation Code relating to imbalances between estimated and actual power production exceeding certain tolerance limits while a **Transitional Mechanism for Optimum Accurate Forecasting** will be provided in the said code.
- A transitional **management premium** on top of the applicable RT will be provided to compensate them for the additional cost of participating in the market. This premium will amount initially to **€3/MWh** for wind parks up to 10MW and to **€ 2/MWh** for all other RES projects (including wind parks above 10MW). Premium is not paid in case of excess of certain tolerance limits for imbalances. Also, it will not be attributed to projects selected through a competitive bidding process (auction).
- In case the **wholesale electricity market price is in excess of the RT** within a dispatch period, any such surplus is credited to the market operator.
- Generators **are not reimbursed** for any amount of electricity generated **beyond 2 consecutive hours of negative wholesale electricity market price**.

# Main features of the new scheme (continued)

## Calculation and payment of the operating aid

- In the case of **FiT contracts** (i.e. for small-scale exempted projects and projects in the NIIs), the operating aid will be **equal to the applicable RT** per RES technology.
- In the case of **FiP contracts**, the operating aid - as a premium on top of generator's wholesale electricity market revenues - will be the difference between a special market price per RES technology (**Special Market Price per Renewable Technology or $SMP_{RES}$**) and the applicable RT for each technology or project (in case of auctions) concerned:

$$FiP_{RES\ Technology\ or\ Project} = RT_{RES\ Technology\ or\ Project} - SMP_{RES}$$

- The **$SMP_{RES}$** is calculated (in €/MWh) per hourly dispatch period of a calendar month, differently for intermittent (i.e. wind power, solar PV and small hydro power plants) and non-intermittent (i.e. biomass, biogas, geothermal, solar thermal power plants) projects.
- In case the **$SMP_{RES}$** is in excess of the corresponding RT, the excess is rebated to the special account for renewables.
- Any capital, or equivalent investment aid granted to projects will be taken into account and deducted from the operating aid, based on regulated project internal rate of return.
- **$SMP_{RES}$** does not necessarily coincide with the clearing price based on which a specific generator received market revenues for the same dispatch period. Variations though seem to be minimal.
- The methodology for these calculations and for the payment procedures are elaborated in a ministerial decision issued in December 2016.

# Main features of the new scheme (continued)

**Reference Tariffs (RTs) administratively set for the first period of scheme's application**

| Technology/ Project category | Reference Tariff (€/MWh) | Technology/ Project category | Reference Tariff (€/MWh) |
|---|---|---|---|
| Wind farms | 98 | Landfill gas P>2MW | 106 |
| Sm. Hydro P<3MWe | 100 | Biogas P<3MW | 225 |
| Sm. Hydro P>3MWe | 97 | Biogas P>3MW | 204 |
| Biomass excluding gasification P<1MW | 184 | Solar thermal without storage | 257 |
| Biomass including gasification P<1MW | 193 | Solar thermal with storage (min. 2 hours) | 278 |
| Biomass 1MW<P<5MW | 162 | Geothermal P<5MW | 139 |
| Biomass P<5MW | 140 | Geothermal P<5MW | 108 |
| Landfill gas P<2MW | 129 | Other RES | 90 |



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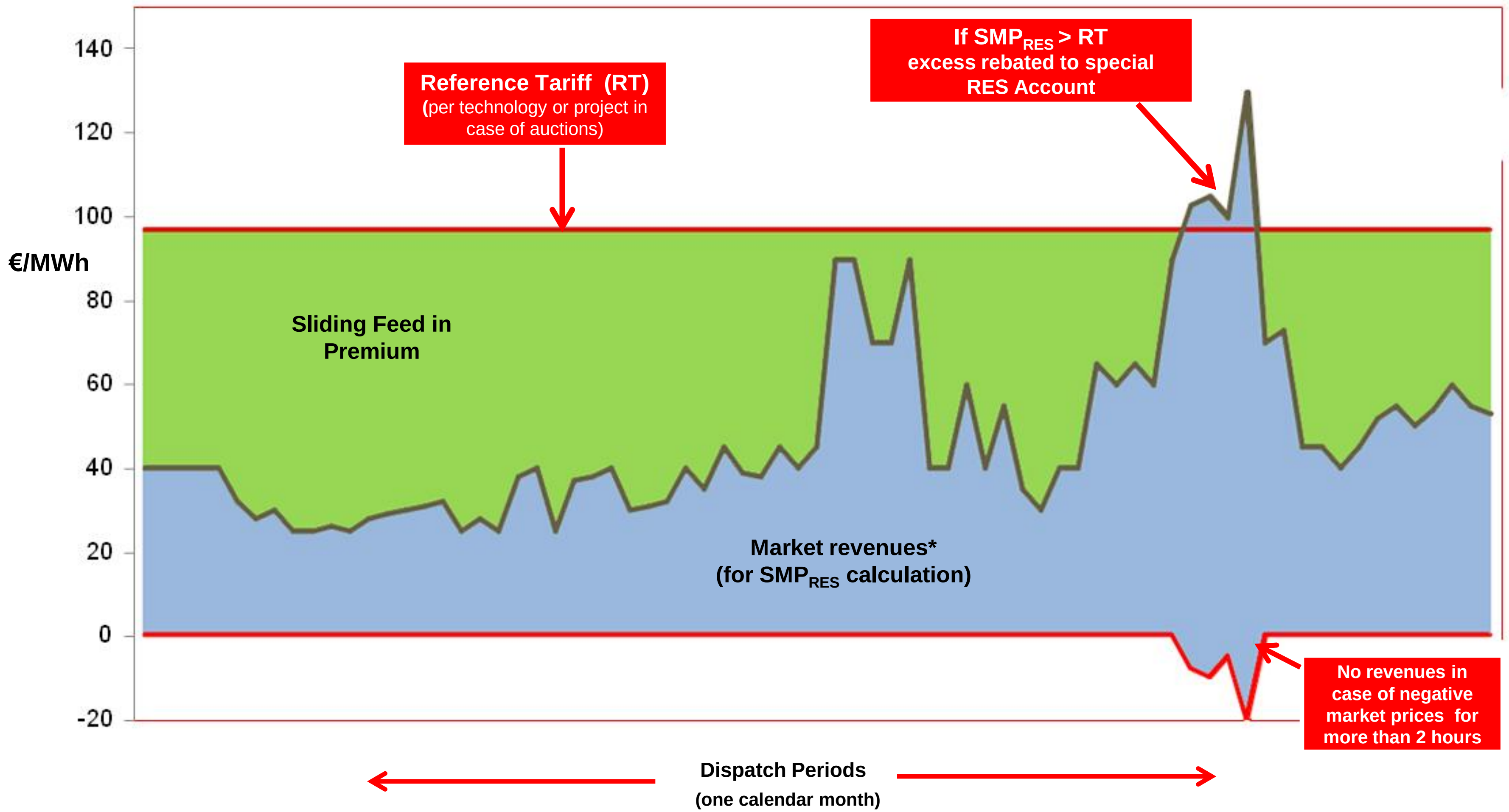
# New FiP based Support Scheme – Snapshot




*** Since $SMP_{RES}$ is a value deriving as the result of the weighted average price of the power generated by all power plants of a specific technology during the dispatch periods of one calendar month and irrespective of their support scheme (FiT or FiP), it does not necessarily reflect the actual price upon which the power generated by each power plant of this technology was compensated during the same period and consequently, the actual revenues each power plant received from the market.**



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# Restructuring of the Special RES Account – Suppliers' Charge

- The Special Account for Renewables (ELAPE in Greek), from which all generators are paid, has been also restructured by the Law with a view to eliminating its **deficit**, which currently stands at **€140 million**.

- **Separate** albeit interlinked **Special Sub-Accounts** for Renewables are now held and managed by the market operator (LAGIE) and the non-interconnected islands network operator (DEDDIE), for their areas of competence, respectively.

- An additional revenue is provided by the Law. This is a **variable charge imposed on electricity suppliers** based on their avoided average cost for electricity purchased, through the wholesale electricity market, **had there not been any renewable electricity available**. This charge is also taken into consideration for the monthly calculation of the Special Market Price for Renewables ($SMP_{RES}$). RAE recently revised the initial methodology set for the calculation of this charge after the very high levels recorded in December 2016 and January 2017.

- Further, the establishment of a secondary **special market for certificates of origin** for renewable electricity is also provided.

# State of Play

- Focus on two categories of projects / those still eligible under the ‘old’ FiT based support scheme (grandfathered projects) and those contracted within 2016 and fall under the FiP scheme but excluded from auctions.
- Main focus on the first category and especially, on **wind projects** (**1GW** of contracted wind capacity in the interconnected system – 67 projects).
- Key wind market players have initiated the implementation of grandfathered (FiT based) projects (Terna Energy, Eren Groupe, Protergia, Eltech Anemos).
- Not so many large-scale **grandfathered wind** projects. Following the recent extension of the completion deadlines, the market **estimates** that the new wind capacity to come under these projects will be in the range of **400 to 500MW**.
- No big appetite for other renewable technologies / however, the **pilot tender** for the addition of **40MWp new solar PV capacity** was successful.
- The lack of the full set of the implementing legislation of the new support scheme and in particular the still pending scheme for the permanent auctions does not help RES developers to plan their investment strategy.

# State of Play (continued)

- However, the ministerial decisions determining the form of the FiP based contracts, as well as the form of the new FiT based contracts for small-scale projects and projects in the NIIs, that were issued in December 2016, finally enabled several RES developers to enter mainly into **FiP** based contracts by the end of 2016 (for **wind** approx. **300MW** – 16 projects).
- FiP contracted projects do not seem to be threaten by any hard completion deadline, other than time restrictions set under their installation licences, so their actual implementation rate is expected to be high.
- RAE recently opined on the design of the permanent FiP based auctions scheme, main points of which are summarized below:
  - Solar PV and wind technologies will fall under the auctions regime while other renewable technologies (e.g. biomass, biogas, geothermal, small-hydro) up to an aggregate capacity of 300MW may be exempted.
  - New solar PV and wind projects, other than those in specific areas such as south Evia, should have secured final grid connection terms in order to be eligible to participate in the auctions.
  - An exemption may be also granted to small-scale wind projects up to 3MW, wind projects up to 6MW developed by multi-stakeholder schemes, hybrid projects in the NIIs, as well as to offshore wind and large-scale wind projects in NIIs with dedicated subsea cable grid connection.
  - No 'technology-neutral' auctions.
  - Pay- as- bid Reference Tariff
  - Auctions per geographical zones is also possible as well as auctions for licensing of new wind projects in areas with existing grid capacity but not with a pipeline of mature projects (e.g. south Evia).

# State of Play (continued)

- The procedural framework of the pilot auction of December 2016 for the addition of 40MWp solar PV capacity will be used as a precedent for the 2017-2020 permanent auctions scheme.
- **DG COMP's approval** of the permanent scheme for the **auctions** should not be expected before the end of this summer.
- RAE estimates that **more than 2GW of new wind capacity** will be eligible to participate in the **auctions** to be rolled out within the period **2017-2020**. A significant part of this capacity will come from grandfathered projects which will not materialize by end March 2019.
- Greek Ministry estimates the addition of **2.2 to 2.7 GW** of new renewable power capacity to be added to the existing 5.5 GW **by end 2020**.
- IFIs, such as EBRD and EIB, have started financing Greek renewable energy projects.



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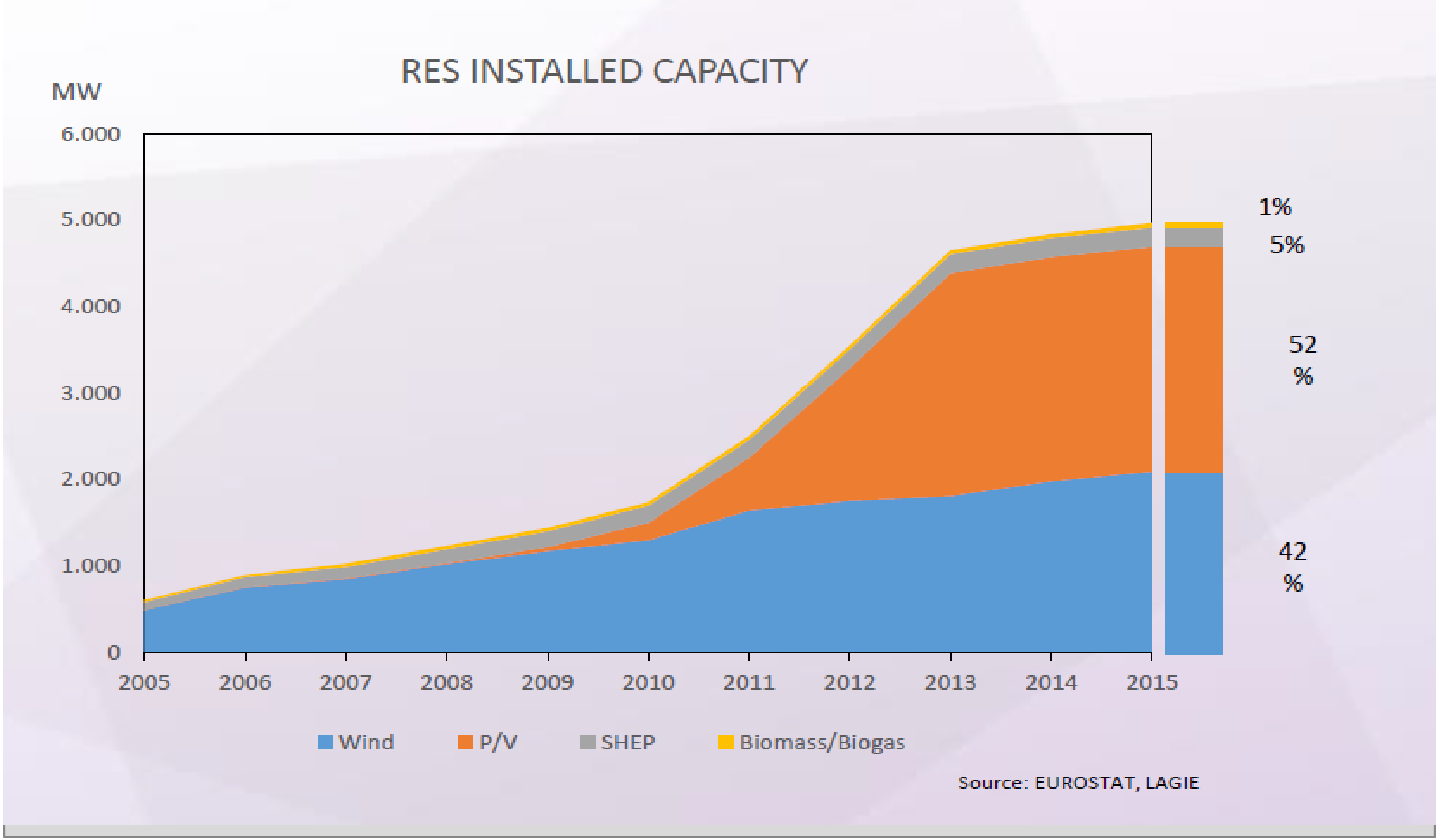
# Challenges ahead

- Adoption of the remaining implementing legislation package so to lift uncertainties and elaborate in adequate detail the rather generic language of the Law 4414.
- Prompt approval of the permanent auctions scheme from DG COMP.
- Improvement of the collection rate of PPC's overdue receivables and consequently, reduction of the current 7-month delay in the payment of the generators.
- Continuation of the progress made towards the elimination of  Special Account's (ELAPE) deficit by end 2017.
- Implementation ratio of the 1GW contracted wind capacity (grandfathered projects) by end March 2019.
- Country's macroeconomic conditions.
- Greek banking system's ability to cope with increased debt financing needs.
- Setting up of the new market model by end 2017.
- Progress of System's expansion to Cyclades and other areas with high wind potential (e.g. Crete) so to give a prospect in the sector post 2020.

# RES E Development in Greece – Charts



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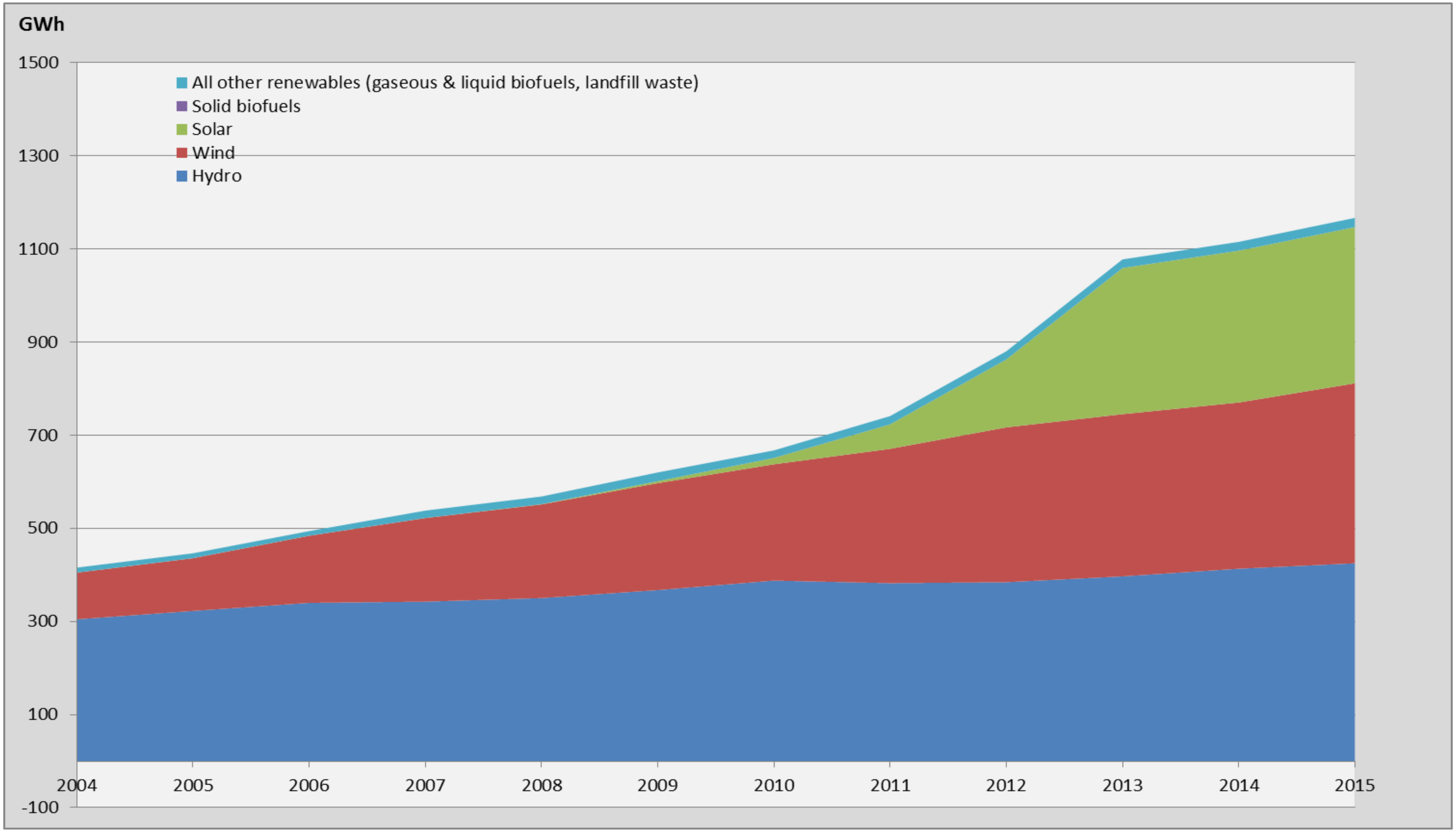
# RES E Development in Greece – Charts (continued)

## RES Power Production 2004 – 2015




Source: Eurostat - March 2017

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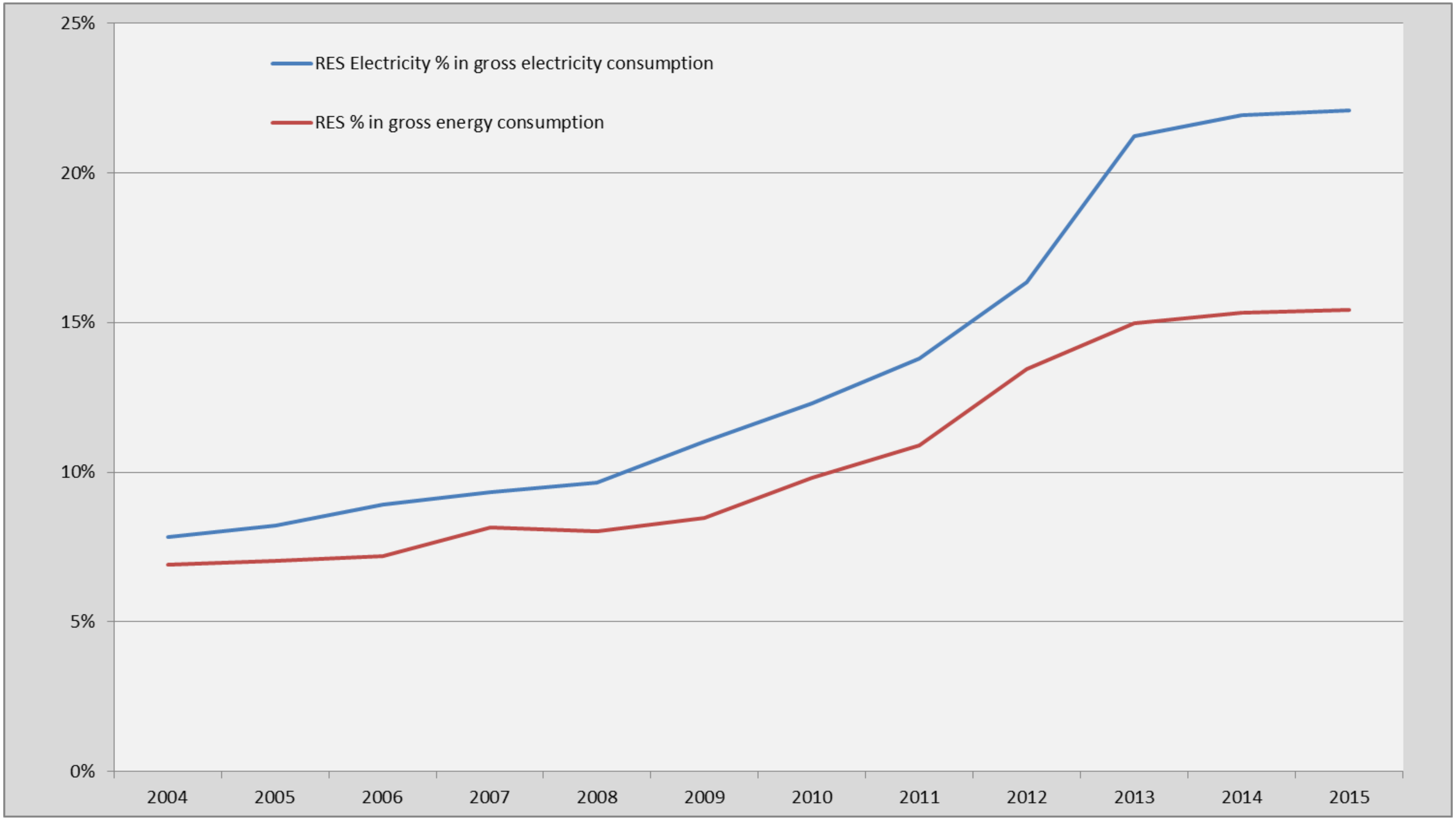
# RES E Development in Greece – Charts (continued)

## RES Indicators 2004-2015




Source: Eurostat - March 2017

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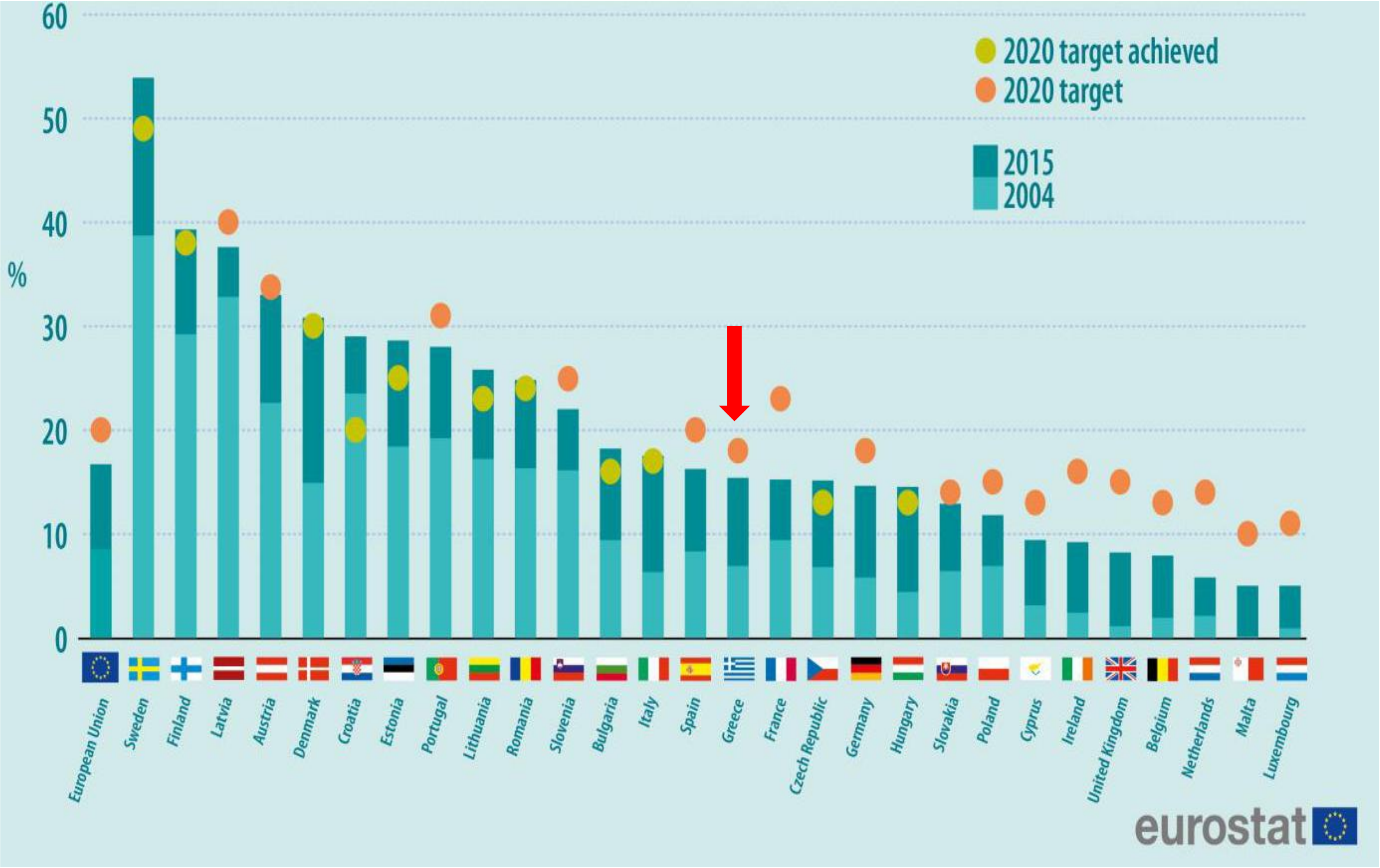
# Status vs. 2020 Target Chart



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