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Multilateral Assessment

A compilation of questions to - and answers by - Greece
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Question by United States of America at Monday, 05 April 2021

Category: Progress towards the achievement of its quantified economy-wide emission reduction target

Type: Before 05 April

Title: National Circular Economy Strategy lessons

The circular economy is a pivotal element of Greece's development strategy. Could you share more about your National Circular Economy Strategy and some lessons learned through its implementation?

Answer by Greece, Tuesday, 01 June 2021

Greece has adopted a National Strategy for Circular Economy since December 2018. It aims at promoting circular economy in Greece and it aligns with the development strategy of the country. It includes a series of actions such as development of strategy for green public procurement, reduce of food waste, promotion of circularity in industrial processes, increase of water reuse, finalization of the legislative framework on waste management, development of circular economy standards and indicators for monitoring of the circular economy strategy implementation etc.

Important lessons learnt from the National Strategy for Circular Economy include the increase of awareness of relevant Ministries, local authorities, regions and municipalities, businesses, consumers, and professional organizations on circular economy issues. Also, circular economy principles have started to be a component of the development strategy planning at public (national and local level) and at private sector. Furthermore, an Interministerial Committee and a National Council for circular economy (a board of involved national professional producers) have been developed and are in operation in order to support the Ministry for the Environment for planning strategies and taking decisions and measures on circular economy issues.

A number of actions have been finalized such as the adoption of the National Plan for Green Public Procurement, the National Plan for Waste Management, the legislation on Single Use Plastics. Additionally a number of actions are ongoing such as the use of certain waste for alternative fuels, increase of circularity in industrial processes, promotion of industrial symbiosis and implementation of the Extended Producer Responsibility (EPR) for certain waste streams according to the EU legislation. Other actions which are close to be finalized, are the National Plan for Waste Prevention, the legislative framework on Waste Packaging, the development of national standards and indicators for circular economy.

In the light of the new EU Circular Economy Action Plan (March 2020), Greece has developed a New Circular Economy Action Plan with a corresponding Roadmap, which has been recently set to public consultation. The new National Circular Economy Action Plan aims at fostering the shift towards a cyclical sustainable development model by boosting competition and protecting the environment. The new National Circular Economy Action Plan has been set in public consultation on 30th March 2021.

More specifically, the National Action Plan includes a series of concrete actions to be implemented over the period 2021 – 2025, with the specification of the key entity in charge

for their implementation. These actions cover circular economy issues such as production, consumption, waste management as well as horizontal issues related to governance and administration arrangements.

In more detail, the concrete time-bound actions included, focus on:

- production, consumption, waste management and horizontal issues related to governance and administration;

- products and services which are resource intensive and where the potential for circularity is high, such as: electronics and ICT; batteries and vehicles; packaging; plastics; textiles; construction and buildings; food waste and water use.

In particular, the General Secretariat for Industry within the framework of the National Action Plan for Cyclical Economy, in accordance with the European Plan Action Plan for Cyclical Economy and the requirements of the UN Agenda 2030 for sustainable Development, aims to promote cyclical economy through:

- Financial tools and aids
- Reduction of administrative burdens and red tape barriers.
- Design and establishment of regulatory framework
- Actions for the efficient association of SMEs and society with technological innovation and developments. Provision of support to pilot cyclical economy projects.

Within the New Industry Policy, Cyclical Economy is regarded as business opportunity, at the same time promoting the achievement of targets set in the National Waste Management Plan.

During the previous National Operational Framework period the General Secretariat for Industry provided financial aid for SMEs through three “state-aid” programmes (namely “Green infrastructures”, “Green enterprise” and “Relocation of entreprises to industrial areas and business parks ») aiming to promote recycling and reuse of waste materials, and to improve the environmental fingerprint of industries. The total budget for these programmes was over 17,000,000 euros of which public expenditure was 6,818,000 euros.

In the current National Operational Framework the “state-aid” programme « Environmental Infrastructures» is currently on going. The programme provides financial aid to SMEs for new investments in the field of reuse and recovery of materials from all waste streams, thus promoting circular economy and creating added value materials. The total public expenditure allocated for this ongoing project is 40,000,000 euros. The programme addresses both new and existing companies. The minimum budget for an individual project is 400,000 euros and the maximum 3,000,000 euros. The maximum percentage of public expenditure varies depending on the size of the company (very small, small, medium) and on the district of the investment and can be up to 55%. So far, up to 70 companies have submitted proposals for the programme.

Within the same scope, state-aid programmes are currently under consideration for the coming National Operational Framework. These programmes aim to encourage enterprises to adopt an environmental approach to their activities, to reinforce recycling/ reuse and material recovery from waste, especially in waste streams where Greece falls behind the

national targets, to benefit from high added value recovered materials, and to promote products made from recycled / refuse derived materials or alternative raw materials especially in the plastic manufacturing industry.

At the same time The General Secretariat for Industry is the focal point for the initiation the **Important Projects of Common European Interest (IPCEIs).** IPCEIs projects are part of the new European Industrial Policy Strategy (2017). They are joint projects among member states and must be of a major innovative nature or of important added value in the light of the state of the art in the sector.

Currently Greece is participating in the European Battery Innovation (EuBatIn) programme with one participant. The beneficiary aims to develop low-cost, environmentally-friendly lithium-ion battery technology. The General Secretariat for Industry is the coordinator and the rapporteur for this project.

Recently the call for a second programme in microelectronics has been launched in Greece, The General Secretariat for Industry being again the coordinator and the rapporteur, and a call for a third programme is about to be launched regarding the chain of value of Hydrogen. The latter will be focusing on Hydrogen market, including sectors along the whole hydrogen value chain, such as safe and sustainable low-carbon production of hydrogen, equipment manufacturing, solutions for hydrogen storage, transmission and distribution. The General Secretariat for Industry of the Ministry of Development and Investments jointly with the Ministry of Environment and Energy will be coordinating this project.

Question by United States of America at Monday, 05 April 2021

Category: Progress towards the achievement of its quantified economy-wide emission reduction target

Type: Before 05 April

Title: Lessons from National Energy Climate Plan

Could you share lessons learned to date from the implementation of Greece's National Energy Climate Plan, and the ambitious shift to renewable energy resources?

Answer by Greece, Tuesday, 01 June 2021

Although the implementation period for the NECP has just started, in the case of RES penetration the introduction of demand side response balancing market products, the flexible load of storage systems, and intelligent energy management systems, the completion of the Interconnections plan will allow increased integration of RES energy into the system. The coupling of the electricity and the heating-cooling sectors (power-to-heat) through energy efficient heat pumps is already an economically interesting approach, and there are also other options for converting electricity to thermal energy and then storing it.

Along the same lines we consider that the coupling of sectors refers to the possibility of linking power generation with different energy sectors, such as power-to-heat and power-to-gas (e.g. hydrogen) storage applications.

In order to fill the gap in domestic production we give great priority to onshore wind farms and photovoltaic installations which are the most economical technologies. However, the expected growth of these large-scale variable RES poses challenges for the stability and safety of the electrical system. The development of storage facilities seems to be an oneway option, while its value to the system has already been demonstrated in many ways by studies done by the National Technical University of Athens (NTUA).

The development of the institutional framework has been entrusted to a group of experts and at the same time more specialized studies are planned to determine the sizes of the storage systems, the appropriate mixture of batteries and pump storage systems and in the long run, of course, we have to determine the role of the hydrogen as a competitive large-scale storage medium. The proper mixture of storage systems is expected to contribute decisively to the provision of the necessary ancillary services for the smooth operation and stability of the system.

For a successful transition, different technologies are to be applied to manage different challenges, according to the market. This includes technologies such as power to methane (CH4) and power to hydrogen (H2).

A main aim of Greece's NECP and Long Term Strategy for 2050 is to combine consumption sectors to the greatest and most efficient extent possible. In this context, Greece is strongly supportive of hydrogen's potential on the path to further decarbonization of its energy mix. Hydrogen will be able to replace fossil fuels, both as a fuel and as a feedstock, in some key hard-to-abate industry and transport sectors.

Question by United States of America at Monday, 05 April 2021

Category: Progress towards the achievement of its quantified economy-wide emission reduction target

Type: Before 05 April

Title: Transition from lignite coal

We commend Greece's target of ceasing the use of lignite coal by 2028. Could you share some of the lessons learned in decommissioning old inefficient thermal power units,

specifically those powered by lignite coal, and transitioning to other energy sources?

Answer by Greece, Tuesday, 01 June 2021

First, to highlight the new plan by the Greek Government to reach lignite-free electricity production by 2025, three years earlier than planned.

It is well known that Greece follows a front-loaded de-lignitization program. In order to fill the gap in domestic production we give great priority to onshore wind farms and photovoltaic installations which are the most economical technologies.

However, the expected growth of these large-scale variable RES poses challenges for the stability and safety of the electrical system.

The Greek National Recovery and Resilience Plan (NRRP) builds and places emphasis on investments and reforms that support the efforts of the Hellenic Republic to attain, inter alia, its strategy for the sustainable green transition of the country's economy; especially in the post covid-19 era. The NRRP's strategic priorities and objectives have as basis the targets and envisaged policies and measures under the National Energy and Climate Plan (NECP) and are also enriched and augmented by other sector-specific national plans.

Question by United Kingdom of Great Britain and Northern Ireland at Thursday, 01 April 2021

Category: Progress towards the achievement of its quantified economy-wide emission reduction target

Type: Before 05 April

Title: Island electricity interconnection policies

We note with interest that Greece’s NECP includes information on accelerating the electricity interconnection of islands, a policy that many diverse Parties will also be working on. Can Greece share barriers to island electricity interconnection, and lessons learnt in implementing policies?

Answer by Greece, Tuesday, 01 June 2021

Electricity interconnections of Greek islands to the mainland energy system is one of the key policy objectives set in Greece's NECP, with a clear and ambitious plan to interconnect most of them by 2030. The main drivers for setting such ambitious targets are namely the need to

increase energy security and resilience of supply to these small systems, the need to decarbonize the energy production sector on these systems and last but not least, to reduce the cost of energy.

In addition, for islands that is not economically viable to interconnect due to various reasons, there is a plan to install hybrid systems on them, consisting of RES production and storage systems, mainly in the form of battery units. Such hybrid systems will replace existing thermal plants to a large extend, aiming for RES penetration starting from 50% and going up to 85% or more.

The emergence of new "green" islands, after Tilos and Ai Stratis, which can be international examples of high RES penetration and disengagement from fossil fuels in energy production and transportation, constitutes one of the pillars of the Hellenic Government strategy for a climate-neutral economy. For example, for the case of the island of Tilos, which is located in the southeastern Aegean Sea. Its 500 inhabitants used to be supplied with oil-based electricity via an undersea cable from Kos island. The EU Horizon 2020 programme supported a pioneer hybrid system comprising an 800 kW wind turbine, a 160 kW photovoltaic park and an advanced battery storage system of 2.88 MWh/800 kW. With the use of smart metering and demand-side management devices, installed in almost every residence on the island, local consumers on Tilos are actively involved in the operation of the smart microgrid, helping maximise exploitation of local renewables and avoidance of oil imports.

Another interesting project is the transformation of the Astypalea island (which belongs to the Dodecanese group of islands) into a model island for sustainable development. The plan is to prepare a case study for a "smart" low carbon footprint and green island in the Greek Islands. The project "Astypalea, A Smart & Sustainable Island" is the result of a technical and financial co-operation between the Greek Government and the German automotive Volkswagen Group.

The island’s hybrid power supply system, will consist of a combination of photovoltaic units and wind turbines, as well as a unit of electricity storage in batteries. All vehicles in the island (both private and state) will be electrical. There will be a Greek Government/Volkswagen subsidy program specifically for Astypalea, for the introduction of smart vehicle charging systems and the replacement of all vehicles with electric ones. Under the program, incentives will be introduced to replace conventional cars with electric ones, through a funding program. In total, about 1,000 internal combustion engines will be replaced by electric vehicles.

The combination of island interconnections and the development of hybrid systems will result in significant reduction in both energy costs and CO2 emissions for these small energy systems.

It is worth noting though, that the co-operation with all stakeholders involved in this transition, such as the Energy System Operator, Local and Regional Authorities, is key in order to achieve wide consensus of local communities and avoid any delays in the implementation or

issues during operation.

Concerning the financing of the electricity interconnection of islands, a new financial mechanism is developed that will strengthen the actions for the energy transition of the islands towards their decarbonization. The new mechanism is based on the “Islands’ Decarbonization Fund”, which is expected to be financed with a total sum ranging from 750m to 800m euros. These funds will come from the unallocated emission allowances of the European Emissions Trading Scheme (ETS) for the period 2013-2020.

Greece is entitled (Art. 10a, para. 9 of the Directive 2003/87/EC of the European Parliament and of the Council) to revenues from the auction of 25 million EU allowances for the decarbonization of the islands, which will be given for the period 2021-2030. The total sum, based on the current prices of pollutant allowances that have reached 57 euros per ton, may exceed 800 million euros.

These revenues are expected to be distributed as follows: approximately 450 million euros will be used by the operators of electricity networks for the interconnections of the islands and the upgrade of the electricity distribution infrastructure. The remaining 300 to 350 million euros will be directed to energy efficiency actions exclusively for the needs of the islands, both for households and for businesses mainly in the tourism sector.

Finally, there are many technological barriers that need to be overcome for the interconnection of islands. For example, the submarine interconnection between the island of Crete and the Peloponnese peninsula, which was completed in May 2021, was a record-breaking project in terms of length (174 km), depth (maximum water depth 1000m) and innovative HVAC (High Voltage Alternating Current) cable technology (innovative cable-system technology, based on a synthetic armor 30% lighter than steel).

Question by New Zealand at Thursday, 01 April 2021

Category: Progress towards the achievement of its quantified economy-wide emission reduction target

Type: Before 05 April

Title: National Waste Management Plan 2015

The National Waste Management Plan 2015 sets out goals to be achieved for the year 2020. Can Greece please provide information on the current status and progress towards these goals? Does Greece have any other plans for the waste sector beyond 2020?

Answer by Greece, Tuesday, 01 June 2021

The National Waste Management Plan was adopted with the no. 49 “Act of the Council of Ministers” on 15 December 2015 (Government Gazette 174 B), and it is concerned the period 2015 to 2020. The new National Waste Management Plan (NWMP) was approved on 31 August 2020 with no. 39 “Act of the Council of Ministers” (Government Gazette 185 A, 2020) and covers the period 2020-2030.

According to the provisions of Law 4042/2012 (Government Gazette 34 A) as amended by Law 4685 / 2020 (Government Gazette 92 A), the NWMP covers a period of ten (10) years, it is evaluated every five (5) years and it is revised, if necessary.

The new NWMP (2020-2030) has set ambitious targets compatible with the objectives of the EU waste policy for waste sorting at source, which are also the objectives of the EU circular economy policy. Actually, it targets on the increase for reuse and recycling of Municipal Solid Waste (MSW) at 55% w/w by 2025 and at 60% w/w by 2030, at least.

Moreover, it aims at the solid waste landfill minimization to 10% of MSW generated by 2030.

For the achievement of these objectives, specific measures are planned to be adopted while competent bodies responsible for the implementation of these measures are developed, aiming at separate collection, which among others provides:

•€€€€€€€€ separate collection of new waste streams,

•€€€€€€€€ sorting at source,

•€€€€€€€€ application of the "Pay as you throw" principle,

•€€€€€€€€ the enhancement and upgrading of the Recycling Material Sorting Centers (RMSC).

Progress assessment of the waste management and goals achievement for NWMP 2015 - 2020 is reported in the NWMP 2020 - 2030. It is referred that as per data submitted by the Ministry of Environment and Energy to the European Union and to the international organizations, the purpose and objectives of the NWMP 2015 - 2020 have not been achieved.

For the period 2015 to 2018, waste recycling with sorting at the source has been increased, from 790,000 tn (15.0%) to 913,000 tn (16.5%). In the same way, for organic waste, from 109,000 tn (4.7%) in 2015 recycled amounts increased to 139,000 tn in 2018 (5.7% w/w of organic waste generated amount).

Regarding the total MSW recycling, from 833.000 tn (15.8%) in 2015, was increased to 1.111.000 tn (20.1% w/w of MSW) in 2018. It is noted that the increase on MSW recycling is mainly carried out due to the operation of mechanical biological treatment (MBT) units since 2017.

Moreover, under the framework of provision of Article 29 of Directive 2008/98/EC as amended and placed in force by Directive (EU) 2018/851 about the elaboration of prevention programs, with no. 49 Act of the Council of Ministers on 15 December 2015 (Government Gazette 174 B), the National Strategic Plan for the Prevention of Waste Generation for the period 2015 -2020 was approved. The new National Waste Prevention Program (NWPP) for the period 2021 - 2030 has already been prepared and it is expected to be approved in the following period by the Council of Ministers.

The main goal of the new NWPP is to develop a coordinated approach to create the conditions for lower consumption of raw materials and the transformation of consumption patterns, with the ultimate goal of achieving a gradual reduction in waste production. The avoidance of waste, as well as the reduction of their environmental impact, can be achieved by effectively providing feedback and standards for their producers, combined with the coordinated and strategic cooperation of all parts of the supply chain and, of course, with systematic information, raising awareness and involvement of civil society.

Question by New Zealand at Thursday, 01 April 2021

Category: Assumptions, conditions and methodologies related to the attainment of its quantified economy-wide emission reduction target

Type: Before 05 April

Title: "Pay as you throw" principle

Can Greece please provide more information on the effectiveness of the application of the principle “pay as you throw”? New Zealand is interested to know what has worked and what has not worked in terms of enforcing the principle. Did it create behavioural change and did the municipalities take up the opportunities?

Answer by Greece, Tuesday, 01 June 2021

To this day, the system "Pay as you throw" (PAYT) is performed in Greece only at a pilot level, under the framework of a limited number of programs / actions.

It is noted that the implementation of the "Pay as you throw" principle is expected to be placed in the Greek legislation framework with the adoption of the law prepared by the Ministry of Environment and Energy (MEEN) concerning the transposition in the Greek legislation of the following EU Directives:

i. the Directive (EU) 2018/851 for waste

ii. and the Directive (EU) 2018/852 for packaging and packaging waste.

More specifically, the establishment of systems "Pay as you throw" is foreseen in municipalities, where in accordance with a decision of the municipal council the following are defined:

i. the specific waste streams cover under the PAYT stream,

ii. those liable to pay the fees,

iii. and related technical details such as how to calculate, collect or refund the part of the fee calculated on the basis of the waste generated.

Also more specific arrangements are being made regarding the application of the PAYT to specific categories of companies (i.e. catering, complex tourist accommodation, big hotels and industrial facilities).

In addition, in the NWMP 2020 – 2030, the reinforcement of the relevant bodies is foreseen with resources from the Partnership Agreement for the Development Framework 2021-2027 (resources originating from the European Structural and Investment Funds (ESIF) of the European Union), in order to be able to establish monitoring systems of the waste generation of total production or parts of waste streams, especially at the level of residence, building, urban unit, selected producers, in order to facilitate the implementation of PAYT system.

Finally, since November 2019, the integrated LIFE-IP project "Circular Economy Implementation in Greece" (LIFE-IP CEI- Greece - LIFE 18 IPE GR 000013) is implemented with contribution of Ministry of Environment and Energy. This eight-year project aims on the support of the implementation of the National Waste Management Plan, the National Waste Prevention Program and the National Strategy for the Circular Economy, focusing on the promotion of good practices and behavior change. The actions of the project, among others, include the implementation of pilot programs for separate waste collection and PAYT systems.

Question by New Zealand at Thursday, 01 April 2021

Category: Assumptions, conditions and methodologies related to the attainment of its quantified economy-wide emission reduction target

Type: Before 05 April

Title: Wastewater treatment plants and re-use of effluent for cropland irrigation

With regard to the use of tertiary treatment in wastewater treatment plants and re-use of effluent for irrigation of croplands instead of using water from desalination plants, how was this action incorporated into existing treatment plants at the time and has this meant a change to its existing programmes and operations?

Answer by Greece, Tuesday, 01 June 2021

Water re-use activities in Greece are regulated mainly by:

i. the Joint Ministerial Decision 145116/2011, 'Definition of measures, conditions and procedures for the re-use of treated wastewater' (Government Gazette B '354), as it is amended and placed in force,

ii. the Directive 91/271 / EEC on urban waste water management

iii. the Water Framework Directive 2000/60/EC.

Pursuant to the above legislation, in some cases the reuse of recovered water for irrigation purposes of crops is applied, from treated wastewater of Wastewater Treatment Plants that apply appropriate treatment for the respective uses.

Usually, the application of recycled water from urban wastewater for irrigation of crops is done as a priority in cases of existing wastewater treatment plants that already apply tertiary / advanced treatment and the treated effluent already meets the quality requirements of the legislation without requiring additional improvements of the facilities.

The application of re-use of effluent from wastewater treatment plants for cropland irrigation is not extensively applied in Greece and it is performed in less than the 5% of total wastewater amount, resulting, however, in most of the cases in reduction of groundwater pumping needs.

Question by New Zealand at Thursday, 01 April 2021

Category: Assumptions, conditions and methodologies related to the attainment of its quantified economy-wide emission reduction target

Type: Before 05 April

Title: Recovery of organic waste

New Zealand is interested to know how effective the recovery of organic waste has been since its implementation in 2002? What was the direct impact? Additionally, are the mitigation impact figures for 2015 and 2020 targets or actual mitigation impacts?

Answer by Greece, Tuesday, 01 June 2021

In accordance with the Article 4 of JMC 29407/3508/2002 (incorporating Article 5 of Directive 1999/31 /EC) by August 2020, the organic share of municipal solid waste, which are landfilled, should be reduced to 35% of the organic share of municipal solid waste produced in 1997 (i.e. the maximum quantity of organic MSW in 2020 that can be landfilled: 910,000 tons). The amount of organic waste that has been disposed in MSW disposal sites exceeded by almost 2 million tons the maximum permitted amount as per Greek legislation and the 2015 National Waste Management Plan. More specific, in 2018, 2,771,773 tons of organic MSW were landfilled. The main reason for this deviation is the delays:

(a) in the construction of municipal waste treatment plants

(b) in the implementation of the separate organic waste collection systems.

With the new National Waste Management Plan (2021-2030), which aims at the reduction of landfilled amounts of MSW to the 10% of the produced MSW by 2030, the separate collection of organic waste for the whole country is foreseen by the end of 2022. Furthermore, emphasis is given on the establishment of an adequate national network of waste treatment plants, but also a network of bio-waste treatment plants throughout the country, either as independent units or within the waste treatment plants that have a separate stream for bio-waste management.

At the same time, the production of alternative fuels by the waste treatment plants is promoted, using also the residues of Recycling Centers, in order to reduce the amounts of waste from these centers that are landfilled. A major element of National Waste Management Plan 2020-2030 is the development of a number of power plants (at least 3-4 units) operating with fuel from the residues of waste treatment plants, the residues from the Recycling Centers, from alternative fuels or from any other residual waste stream resulting from the treatment / sorting of separately collected waste streams.

Finally, the development of a network for the collection of organic waste from agricultural activities is foreseen for the production of agricultural products (such as animal feed) or power generation from biogas and/or biomass.
