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UNFCCC Multilateral Assessment
GREECE

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GREECE - basic national data:

- **Geography**: 131,957 km², consisting of two main geographic areas:
  - a peninsular mainland, and
  - approx. 6,000 islands & islets

- **Coastline**: 16,300 km

- **Climate**: mild, wet winter and hot, dry summer

- **Population**: 10,718,565 (2020)

- **GDP**: €165,830 mil (2020)
  - 15,471 euros/capita (2020)
  - -29.8% (2020/2007)
  - +4.6% (2019/2013)
  - -8.25% (2020/2019) (covid-19)
GHG emissions profile

- GHG emissions (2019): 85,631 ktCO₂eq or 7.98 tCO₂eq/capita
- -37.23% (2019/2005)
- -17.10% (2019/1990)
2020 GHG emission mitigation commitments

✓ Pledge under the Convention for EU and its Member States (Quantified economy-wide emission reduction target, QEERT):
  • Unconditional quantified economy wide emission reduction target of 20% by 2020, compared to 1990 levels

✓ Binding commitment under Kyoto Protocol (implementing CP2 since 1.01.2013):
  • CP2: joint commitment of the EU, its MS and Iceland to reduce average annual emissions during 2013-2020 by 20% compared to base year

✓ EU internal target: 2020 Climate and Energy Package
EU 2020 pledged target under the UNFCCC

- The EU and its Member States are committed to an independent quantified economy-wide emissions reduction target of 20 per cent emission reduction by 2020, compared to 1990 levels.
- The 20% target is based on the understanding that it will be fulfilled jointly with the European Union.
- LULUCF is excluded from the target.
- The target is based on GWPs of IPCC AR4.
- The target is implemented through binding EU legislation and is mainly based on the EU’s “Climate and Energy Package”,
  ✓ For the emissions covered by the EU ETS, under an EU-wide cap, the goal is to reduce emissions of greenhouse gases by 21% in 2020 compared to 2005 levels
  ✓ For the emissions of GHG not covered by the EU ETS, the goal is a collective reduction of 10% in 2020 compared to 2005 levels.
Climate and Energy Package
2020 Greek Targets

✓ For the sectors of Industry & Power, under Directive 2003/87/EC (EU-ETS) there is a single EU-wide cap. For non-ETS sectors (ESD), i.e. Agriculture, Transport, Buildings, Waste etc., the target is 4% reduction of 2005 emissions by 2020.

✓ RES: 18% of final energy consumption mandatory until 2020 (Directive 2009/28/EC). The national target was increased from 18% to 20% by Law 3851/2010.

✓ Primary energy saving of 20% until 2020: The EU has set itself a 20% energy savings target by 2020 when compared to the projected use of energy in 2020 through Directive 2012/27/EU. The national target of Greece for 2020 is 18.4 Mtoe final energy consumption (24.7 Primary energy consumption).
2nd CP (2013-2020) KP target

✓ Under the Kyoto Protocol the EU and its MSs in Doha adopted a QELRC (Quantified emission limitation or reduction commitment) of 20% reduction from base year for the period 2013-2020 (Greece ratified the DA on 17th Nov 2015).

✓ LULUCF activities under Articles 3.3 and 3.4 (Forest Management) will be accounted during 2nd CP by Greece.
2030 climate & energy framework

✓ NDC communicated under the Paris Agreement (GR ratified PA : 7th Oct. 2016)

✓ An update of the NDC was submitted in 2020. The EU and its Member States are committed to a binding target of Economy-wide net domestic reduction of at least 55% in greenhouse gas emissions by 2030 compared to 1990.
European Green Deal

Climate action is at the heart of the European Green Deal:

• **European Climate Law** to ensure the 2050 climate-neutrality objective into EU law (in the process - at the moment, agreed text)

• **European Climate Pact** to engage citizens and all parts of society in climate action

• **2030 Climate Target Plan** to further reduce net greenhouse gas emissions **by at least 55% by 2030 vs 1990**

• **New EU Strategy on Climate Adaptation** to make Europe a climate-resilient society by 2050, fully adapted to the unavoidable impacts of climate change

• Other relative strategies (i.e. “From Farm to Fork” etc)
Key climate related data of Greece

✓ Total estimated mitigation effect of implemented and adopted policies was approx. **25.6 MtCO2 eq in 2015** and is projected to be **36.8 Mt CO2 eq in 2025 and over 55.0 Mt for 2030**

✓ Total CO2 intensity of GDP: **-33.0%** in 2019 compared to 2000
✓ Total CO2 intensity per capita: **-35.8%** in 2019 compared to 2005
✓ Energy related CO2 intensity of GDP: **-37.2%** in 2019 compared to 2000
✓ Carbon intensity of total power generation: **-48.4%** in 2019 compared to 1990
✓ Energy related CO2 intensity of industry: **-28.7%** in 2019 compared to 2000
✓ Specific CO2 intensity of households: **-49.8%** in 2019 compared to 2000
✓ For 2020, further reduction is expected: **ETS emissions -27.6% (2020/2019)**
Projection of GHG emissions (Mt CO2eq)

✓ Total emissions (excluding LULUCF) in 2030: -42% vs 1990, and -56% vs 2005

✓ ETS sector in 2030: -73% vs 2005

✓ Non-ETS sectors in 2030: -38% vs 2005

✓ It is projected that Greece will meet the non-ETS (2020 ESD & 2030 ESR) targets, on the basis of the domestic policies and measures

<table>
<thead>
<tr>
<th></th>
<th>1990</th>
<th>2005</th>
<th>2019</th>
<th>2020 (WM+WAM)</th>
<th>2030 (WM)</th>
<th>2030 (WAM)</th>
<th>2040 (WM)</th>
<th>2040 (WAM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ETS</td>
<td>-</td>
<td>71.8</td>
<td>40.5</td>
<td>31.7</td>
<td>31.2</td>
<td>19.3</td>
<td>23.5</td>
<td>16.7</td>
</tr>
<tr>
<td>Non-ETS</td>
<td>-</td>
<td>64.5</td>
<td>44.7</td>
<td>46.9</td>
<td>45.6</td>
<td>40.2</td>
<td>45.9</td>
<td>38.2.3</td>
</tr>
<tr>
<td>Total</td>
<td>103.1</td>
<td>136.3</td>
<td>85.6</td>
<td>78.8</td>
<td>77.4</td>
<td>60.1</td>
<td>70.1</td>
<td>55.6</td>
</tr>
</tbody>
</table>
The main pillars of the new plan are:

- According to NECP, the plan was to eliminate lignite-electricity production by 2028 the latest.
  
  New plan: **lignite-free electricity production by 2025, three years earlier than planned**

- RES to a share of gross final energy consumption of at least 35%.
- Improve energy efficiency in all sectors of the economy.
  
  The annual objective is to have an average of 60,000 buildings or building units upgraded in terms of energy and/or replaced with new more energy-efficient ones.
## 2030 mitigation targets

<table>
<thead>
<tr>
<th>NECP</th>
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<tbody>
<tr>
<td>Share of RES in Gross Final Energy Consumption ≥ 35%</td>
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<tr>
<td>Share of RES in Gross Final Electricity Consumption ≥ 60%</td>
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<tr>
<td>Final energy consumption ≤ 16.1 Mtoe</td>
</tr>
<tr>
<td>Total installed capacity of PV and wind ≥ 14 GW</td>
</tr>
<tr>
<td>Share of lignite in electricity production 0%</td>
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## Expected GHG emission reductions

<table>
<thead>
<tr>
<th>Reduction of GHG emissions</th>
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<tr>
<td>≥ 42% vs 1990</td>
</tr>
<tr>
<td>≥ 56% vs 2005</td>
</tr>
<tr>
<td>Reduction of EU-ETS GHG emissions</td>
</tr>
<tr>
<td>73% vs 2005</td>
</tr>
<tr>
<td>Reduction of non-ETS GHG emissions</td>
</tr>
<tr>
<td>38% vs 2005</td>
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Climate Neutrality 2050

- Paris Agreement
- EU Green Deal
- National Long-term Strategy for 2050
Just Transition Development Plans of lignite areas
(West Macedonia and Megalopoli)

**W. Macedonia: Expressed interest in 11 major projects estimated to mobilize over €2 billion in new investments in the region**

<table>
<thead>
<tr>
<th>Large investments under consideration</th>
<th>Estimated Investment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clean energy</td>
<td>~€1.5B</td>
</tr>
<tr>
<td>Photovoltaic parks (~2GW) by PPC and ELPE</td>
<td></td>
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<tr>
<td>Green hydrogen production unit by Solaris</td>
<td></td>
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<tr>
<td>Power storage facilities by Eurnice</td>
<td></td>
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<tr>
<td>Field of energy research and technology with PPP with UWW²</td>
<td></td>
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<tr>
<td>Industry, small industry and trade</td>
<td>~€200M</td>
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<tr>
<td>Industrial park with emphasis on the manufacturing of electromobility products (lithium batteries, etc.) by a nationwide group</td>
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<tr>
<td>Establishment of a waste management unit</td>
<td></td>
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<tr>
<td>Biomass processing centre</td>
<td></td>
</tr>
<tr>
<td>Smart agricultural production</td>
<td>~€100M</td>
</tr>
<tr>
<td>Smart agricultural production units of the latest technology (hydroponics) from an international company in the agro-food industry</td>
<td></td>
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<tr>
<td>Sustainable tourism</td>
<td>~€25M</td>
</tr>
<tr>
<td>Wine tourism ecosystem to the standards of Northern Italy, interest from a leading company in winemaking</td>
<td></td>
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<tr>
<td>Other investments</td>
<td>~€60M</td>
</tr>
<tr>
<td>State-of-the-art physical rehabilitation clinic with PPP with public body</td>
<td></td>
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</tbody>
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1. Indicatively: electromobility, hydrogen and alternative fuels, storage technologies. 2. University of Western Macedonia Source: PPC, E2E, Investment plans, Proposals, GIAE Team Analysis

**Megalopoli: Expressed interest in 5 major projects estimated to mobilize ~ €0.5 billion new investments in the area**

<table>
<thead>
<tr>
<th>Large investments under consideration</th>
<th>Estimated Investment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clean energy</td>
<td>~€250M</td>
</tr>
<tr>
<td>Photovoltaic parks (~0.6GW) from PPC</td>
<td></td>
</tr>
<tr>
<td>Industry, handicrafts and trade</td>
<td>~€90M</td>
</tr>
<tr>
<td>Standard pharmaceutical industry, from a large pharmaceutical industry</td>
<td></td>
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<tr>
<td>Smart agricultural production</td>
<td>~€40M</td>
</tr>
<tr>
<td>Intelligent livestock and feed unit and smart agricultural production units</td>
<td></td>
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<tr>
<td>Sustainable tourism</td>
<td>~€40M</td>
</tr>
<tr>
<td>Original adventure, entertainment and education theme park with interest from an international entertainment company</td>
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<tr>
<td>Other investments</td>
<td>~€30M</td>
</tr>
<tr>
<td>Other public investments</td>
<td></td>
</tr>
</tbody>
</table>

Source: PPC, Investment plans, Proposals, GIAE Team Analysis
Approx. a month ago, the 9th May 2021 in particular, we experienced a record 63% contribution from renewables in the total national energy demand in Greece (65.9 GWh out of 104.1 Gwh)

From the energy consumed that day, the wind mills "starred" with 43%, photovoltaics contributed 17% and the other RES (hydroelectric, biogas-biomass etc.) the remaining 3%.
The Greek Recovery and Resilience Plan (RRP), Greece 2.0, aspires to change the Greek growth model and institutions:

- Via ambitious reforms and investments
- Towards an extroverted, competitive, green and digital growth model

One of the main pillars is “green transition” with RFF budget 6.2 € bn and expected total mobilized investment resources of 11.6 € bn.

Key investments:
- Upgrading energy efficiency of buildings for households, firms and the public sector
- Investments in energy storage, electric charge points, batteries, electric vehicles
- Improving electric interconnectivity of islands
- National reforestation plan, biodiversity and strengthening of civil protection
- Urban plans and strategic urban regeneration
Programme for the energy efficiency upgrade of buildings

Target: 60,000 buildings upgraded per year by 2030

The estimated cost is approx. 2 billion €
New project for green H2 production

- **Budget**: 8,063 Bn €
- **Duration**: 2022 - 2029 (R&D, FID και EET)
- **H2 production**: 250,000 t/year
- **CO2 emission reduction**: 11.5 Mt/year

**H2 for other uses**: 58,000 - 71,000 t/year

**New jobs**: 18,000 direct + 29,500 indirect
Discount of the retail price before taxes

15%, <5.500 €

25%, <10.500 €

40%, < 800 €

20%, <800 €

+Bonus 1000 € for disabled people and large families
+Withdrawal bonus 1000 € for old car and 400 € for old motorcycle
+Bonus 500 € for recharger
+Exemption from paying road tax
+Free circulation in the city center and free parking for 2 years
Interconnection with islands

30 million trees = 16.000 ha by 2030

Source: ADMIE

By 2024
By 2030
Reforestation

30 million trees by 2030
Adaptation

- National Climate Change Adaptation Strategy (NAS)
- Regional Adaptation Action Plans (RAAPs)
- National Climate Change Adaptation Committee - NCCAC
- Scientific Committee for Climate Change & Climate Change Ambassador
- National Climate Adaptation Monitoring and Reporting Observatory
Thank you!