



Dimitris Tsekeris | Mechanical & Energy Engineer

CLIMATE CRISIS & ENERGY TRANSFORMATION TOWARDS A PROGRESSIVE DIRECTION

introduction

The Intergovernmental Panel on Climate Change (IPCC) is the United Nations body for assessing the science related to climate change.

The existential threat of climate change to some vulnerable and island countries was the spur for the Paris Agreement's goal to limit global warming to well below 2°C above pre-industrial levels and to pursue efforts to 1.5°C. This stimulated scientists to focus research on 1.5°C.

Here's what we know:

Climate change impacts are happening now

The current ~1°C of global warming is already having impacts and causing damage including in the form of extreme and dangerous weather events – for example the global heatwave this summer, expansive wildfires and deadly hurricanes. We need to adapt and build resilience, and this will only become more pressing at higher temperatures.

1.5°C is safer than 2°C for people and nature

We already know higher global temperatures lead to greater climate impacts – on land, in the oceans, and the in polar regions. But we can now better quantify by how much. For example, nearly 700 million people (9.0% of world population) will be exposed to extreme heat waves at least once every 20 years in a 1.5°C world, but more than 2 billion people (28.2%) in a 2°C world. Similarly in a 1.5°C world, the end of the century projection is that 70% of tropical coral reefs are at risk of severe degra-

ation due to temperature-induced bleaching, but virtually all in a 2°C world.

Breaching 1.5°C is not inevitable

Political leadership is important. So are individual choices. Strong leadership and the right choices can lead to the necessary rapid and deep cuts to greenhouse gas emissions, which improves the chance of limiting warming to 1.5°C. For example, governments encouraging renewable energy over fossil fuels and individuals choosing to eat a healthy, more plant-based diet. This is not to belittle the unprecedented scale of the challenge ahead but shows 1.5°C is not a lost cause.

"Net-zero emissions" are needed

It is better to not pollute in the first place, so rapid and deep cuts are a priority – these are necessary but not sufficient. Actively removing carbon dioxide from the atmosphere to balance out any hard-to-mitigate residual emissions must also happen. We know that land-based carbon dioxide removal options such as forest restoration can have benefits over and above climate mitigation and are a better immediate focus than more technological removal options. The balance between carbon emissions and carbon removals needs to happen globally around mid-century, and sooner in developed countries such as the UK.

The IPCC report on 1.5°C

A Intergovernmental Panel on Climate Change (IPCC) special report has assessed the science of 1.5°C. It was released in October 2018.

The report outlines what it will take to keep glob-

al warming to 1.5°C above pre-industrial levels and underscores the critical need for urgent and transformative climate action as climate impacts increase in scale, frequency and intensity.

The IPCC is the UN body responsible for assessing the science related to climate change. This report will be the authoritative scientific underpinning to guide government policy decision-making as countries look to enhance their national climate commitments under the Paris Agreement.

Climate Change / Climate Emergency

June was the hottest month our planet has ever experienced until July. Europe registered record temperatures, with parts of France hitting a scorching 45.6° C. In India, an extreme and record-breaking heat wave exceeding 50°C killed dozens of people, experts predict parts of the country could become too hot for human life by the end of the century. That's if nothing is done.

Across the world, scientists, leaders, people of all ages, are calling for more action on our changing climate; a growing emergency that's already costing lives globally.

A recent study shows that three quarters of the world's cities will have different climates by 2050. Madrid will feel like Marrakech, London like Barcelona, and Stockholm like Budapest. Delhi, Beijing, Washington, and Jakarta will experience weather like no other city on the planet. The northern hemisphere will become sub-tropical and the tropics will become dry. The future is dangerously uncertain.

Things are heating up for all of us

Between 2000 and 2016, the number of people around the world exposed to heat waves increased by around 125 million, and **eight out of the 10** hottest years on record have been in the last 10 years. During the same period we've also seen the warmest ocean on record, with 2018 being the hottest yet. Europe's summers and winters will see a temperature increase of 3.5° C and 4.7° C. It's a scary upward trajectory.

Currently around 30% of people are exposed to deadly high temperatures for a period of 20 days or more per year. This number is expected to increase to 48%. In fact, extreme heat events are responsible for more deaths annually than hurricanes, lightning, tornadoes, floods, and earthquakes combined.

Climate change has no borders

The consequences of extracting and burning fossil fuels – deadly air pollution, climate change, water shortages, and environmental destruction – transcend borders, and affect all of us.

Coal, the world's worst contributor to climate change, accounts for 46% of global CO2 emissions, and supplies a **quarter of the total EU electricity production**. The EU's energy sector is responsible for 75% of the EU's greenhouse gas emissions.

European decision makers are dangerously stalling the transition from fossil fuels to renewable energy, for fear it will disrupt economies and upset voters. However, according to the European Commission, achieving **net zero emissions** would create more jobs, generate hundreds of billions of Euros in health benefits, and trillions in savings from fossil fuel imports.

EU targets 2030 & 2050

Energy Strategy

The energy sector is undoubtedly in a transitional phase globally, due to important technological advances and challenges related to international commitments aiming to confront the consequences of climate change. Both Paris Agreement and the Agenda-2030 for Sustainable Development in the EU, call for the decoupling of economic growth from CO2 emissions. The new regulatory framework for the EU that we agreed includes:

- an energy efficiency target of 32.5% for 2030, with an upwards revision clause by 2023
- a target of 32% for Renewable Energy Sources (RES) penetration in the final energy consumption
- CO₂ emissions reduction of 40% until 2030

Thus, it is of great importance to transform our economies as well as the respective societies to move towards a clean energy future. This requires huge efforts, well organized planning and dedicated action.

Long Term National Energy Planning

We consider the energy sector as a fundamental pillar of social well-being and economic growth. Therefore, the Ministry of Environment and Energy is currently working on an integrated long term strategy for the energy sector. We create a new ad-

ministrative structure, formed by academics and policy experts that will build this strategy. Our planning could be explained by the motto “security of supply, consumer protection and the welfare of the country in general”.

Moreover, we are transforming our national electricity market in order to move towards “target model” that has been proposed by the European Commission for the creation of a single European electricity market.

The 2030 climate and energy framework includes EU-wide targets and policy objectives for the period from 2021 to 2030.

Key targets for 2030:

- At least 40% cuts in greenhouse gas emissions (from 1990 levels)
- At least 32% share for renewable energy
- At least 32.5% improvement in energy efficiency

The framework was adopted by the European Council in October 2014. The targets for renewables and energy efficiency were revised upwards in 2018.

Greenhouse gas emissions – a cut of at least 40% A binding target to cut emissions in the EU by at least 40% below 1990 levels by 2030.

This will enable the EU to move towards a low-carbon economy and implement its commitments under the Paris Agreement.

Governance system

A transparent and dynamic governance process will help deliver the objectives of the Energy Union, including the 2030 climate and energy targets, in an efficient and coherent manner.

The EU has adopted integrated monitoring and reporting rules to ensure progress towards the 2030 climate and energy targets and its international commitments under the Paris Agreement.

Based on the better regulation principles, the governance process involves consultations with citizens and stakeholders.

National Energy and Climate Plans

Member States are obliged to adopt integrated National Climate and Energy Plans (NECPs) for the

period 2021-2030. Member States had to submit their draft plans by the end of 2018. The final plans must be submitted by the end of 2019.

National long-term strategies

Under the governance system, Member States countries are also required to develop national long-term strategies by 1 January 2020, and ensure consistency between their long-term-strategies and NECPs.

Benefits

A joined-up approach for the period up to 2030 helps ensure regulatory certainty for investors and coordinate EU countries’ efforts.

The framework helps drive progress towards a low-carbon economy and build an energy system that

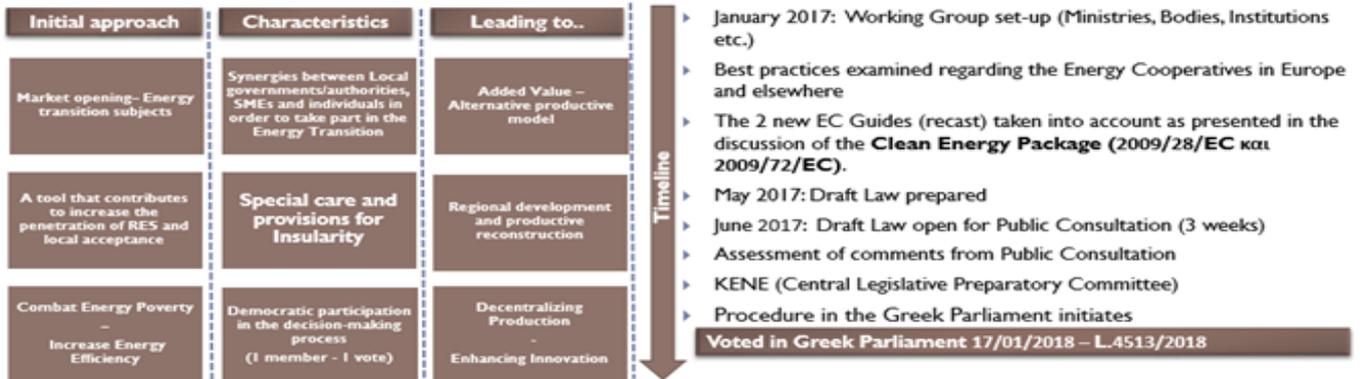
- ensures affordable energy for all consumers,
- increases the security of the EU’s energy supplies,
- reduces our dependence on energy imports,
- creates new opportunities for growth and jobs and
- brings environmental and health benefits – e.g. through reduced air pollution

Greece

SYRIZA was in the government from 2015 until July 2019. Energy and Environment as part of its strategy were core activities.

- Transparency in the energy market
- Boosting RES investments by balancing deficits for RES producers
- Opening the discussion for the post-lignite era and introducing the National Fund for Just Transition (Greece-Poland)
- Reducing prices in the RES through competitive bidding auctions
- Introducing the Left perspective for the Renewables

Background



Definition - Purpose



The Energy Community is an Civil cooperative with the aim of promoting social and solidarity-based economy and innovation in the energy sector; addressing energy poverty and promoting energy sustainability, production, storage, self-consumption, distribution and energy supply, *enhancing energy self-sufficiency / security in island municipalities as well as improving energy efficiency in end-use at local and regional level.*

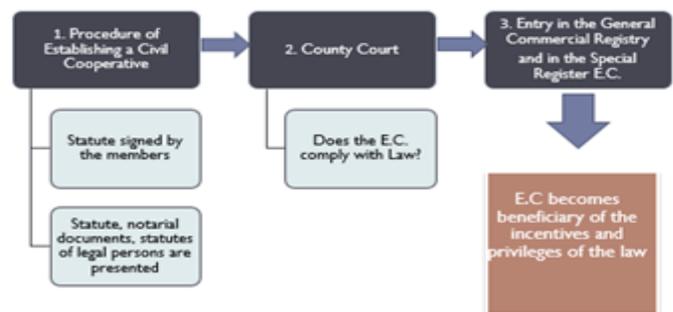
Who can be part of the EC:

- Individuals
- Public entities
- Legal entities governed by private law
- OTA 1st & 2nd grade of the same region

Locality provisions

At least 51% of the members must be related to the place where the headquarters of the E.C is located, namely natural persons - members having full or fine ownership on a property situated within the province of the seat of EC or being municipal residents of that region. Additionally, legal entities to have their headquarters in the region of the E.C.'s headquarters.

Procedure



✓ Ability to convert existing cooperatives into E.C. as well as businesses

E.C. Forms / Categories



Forms	Minimum members	Profit allocation	Shares
Non Profit - No redistribution of surplus(es)	<ul style="list-style-type: none"> 5 for public entities and/or individuals (5*20%) 3 if only OTA are participating (e.g. 35%, 35%, 30%) 3 if members are public and/or private entities, with at least 2 being OTA. (20%, 40%, 40%) 2 if the members are OTA in small islands (50%, 50%) 	<ul style="list-style-type: none"> No distribution of profits allowed- Reserve and disposal for the purposes of E.C. Exception for the islands (<3100) → a portion of the profits may be allocated to local utility actions (eg water and fuel tanks etc.) 	<ul style="list-style-type: none"> ✓ Each member may hold, in addition to the compulsory cooperative share and one or more optional cooperative shares, a maximum of 20% of its share in the cooperative capital, with the exception of the OTA, who may participate in cooperative capital up to a maximum of 40%.
Profitable Character - Distribution of surplus(es) to shareholders	<ul style="list-style-type: none"> 15, in general for all types of participants (public and private entities, individuals etc.) 10 for small islands (below 3100 population) 50% plus one of the shareholders being individuals 	<ul style="list-style-type: none"> Allowing distribution of net profits after deduction of reserves to members/shareholders. 	<p>Special Provision for Small Islands</p> <p>Especially for small islands (<3100 inhabitants), the participation rates of OTA can reach 50%.</p>

- ✓ Each member has one vote, regardless of its cooperative share.
- ✓ The "profitable" or "non-profit" character of E.C. remains throughout its lifetime.

List of Activities

Mandatorily at least one of the following:

- ▶ Production, storage, self-consumption or sale of electric or thermal or cooling energy from RES stations and CHP established within the region of operation
- ▶ Managing (collecting, transporting, processing, storing, disposing) raw material for the production of electric or thermal or cooling energy from biomass or biofuels or biogas or through the energy recovery of the biodegradable fraction of municipal waste.
- ▶ Supply to members of energy products, appliances, installations to reduce energy consumption and use of conventional fuels, and to improve energy efficiency.
- ▶ Supply for members of electric vehicles (hybrid or non-hybrid) and vehicles burning natural gas, liquefied petroleum gas or biogas.
- ▶ Electricity/Gas/Thermal-cooling energy distribution/supply within the region
- ▶ Demand management to reduce end use of electricity.
- ▶ Development, management and operation of charging stations for electrically driven and refueling vehicles with CNG, LNG, LPG or biogas or the management of sustainable transport means within the region
- ▶ Installation and operation of water desalination units using RES
- ▶ Development, management and exploitation of alternative fuel infrastructures or the management of sustainable transport means.
- ▶ Energy Services (ESCOs)

Potentially :

- ▶ Attracting funds for investments in the exploitation of RES or CHP or interventions to improve energy efficiency within the regional unit in which the E.C. operates
- ▶ Preparation of technical and economic studies for the exploitation of RES or CHP or the implementation of energy efficiency improvement interventions or the provision of technical support to the above sectors.
- ▶ Managing or participating in programs funded by national or European Union resources for its purposes.
- ▶ Provide advisory services on the management or participation of its members in programs funded by national or European Union resources for its purposes.
- ▶ Information, education and awareness at local and regional level on energy and sustainability issues.
- ▶ **Actions to address energy poverty for vulnerable consumers or people below the poverty threshold, regardless of whether they are members of the energy community, such as indicatively providing or offsetting energy, energy upgrading housing or other measures that reduce energy consumption in citizens' homes of them.**

Additionally and to wrap up and start also the political discussion

The world is increasingly at risk of “climate apartheid”, where the rich pay to escape heat and hunger caused by the escalating climate crisis while the rest of the world suffers, a report from a UN human rights expert has said.

Tackling and preventing the climate crisis is no longer the sole responsibility of civil protection, but should be a priority in every sector of the state. It is about infrastructure, rural production, ecosystem management, urban development and ultimately social cohesion itself.

We still have time to win a battle that is not only about future generations but ours as well.