



# CLIMATE AND SUSTAINABILITY

NOTE ON THE WORK  
OF THE BANK OF GREECE ON  
CLIMATE AND SUSTAINABILITY

JANUARY 2024



**BANK OF GREECE**  
EUROSYSTEM



# AT A GLANCE

## Climate and sustainability highlights at the BoG:

- Climate Change Impacts Study Committee - an interdisciplinary committee of scientists (2009)
- The environmental, economic and social impacts of climate change in Greece - Report (2011)
- Greek tourism and climate change: adaptation policies and a new growth strategy - Report (2014)
- Climate Change National Adaptation Strategy for Greece - drafting along with the Greek Ministry of Environment and Energy (2015)
- Publication of The economics of climate change (2018)
- Participation in the LIFE-IP AdaptInGR programme for the implementation of the Greek National Adaptation Strategy (2019-2026)
- Advising the Greek Ministry of Environment and Energy on the National Energy and Climate Strategy
- Establishment of the Climate Change and Sustainability Centre to coordinate the climate and sustainability actions of the Bank (2021)
- Climate change features as a recurring item in the Governor's Annual report and other regular publications
- 1st central bank to endorse the UNEP-FI Responsible Banking Principles
- Member of the central banks' and regulators Network for Greening the Financial System (NGFS) and technical groups of experts and committees on climate and sustainability issues
- Investments in green bonds, application of sustainable and responsible investment principles in non-monetary policy portfolios, annual climate-related financial disclosures, in line with the relevant Eurosystem common stance
- Pledge in the context of the 2021 United Nations Climate Change Conference (COP 26), to contribute, within the field of responsibility, to the implementation of the Paris Agreement with actions envisaged across multiple areas of work
- Monthly statistical data providing information on sustainable debt security issuances by domestic residents
- Awareness raising and climate literacy (educational program with the Goulandris Natural History Museum, exhibition "Economy and Climate: Handle with care" of the Museum of the Bank of Greece (2021))
- Environmental impact reduction and implementation of an Environmental Management System (ISO 14001:2015 certified)



# SELECTED PUBLICATIONS


## THE ENVIRONMENTAL, ECONOMIC AND SOCIAL IMPACTS OF CLIMATE CHANGE IN GREECE

This was the first attempt to quantify the impact of climate change on a national scale in Greece. Beginning in early 2009, 112 scientists from different disciplines produced 19 studies and in 2011 published a 520-page report on the environmental, economic and social impact of climate change. The report highlights the wealth of Greece's natural resources, but also the risks to the country's natural and human environment. Climate change appears to be a major threat, as the impact on almost all sectors of the national economy is expected to be adverse. Under an inaction ("business as usual") scenario, the Greek GDP could, *ceteris paribus*, fall by 2% annually by 2050 and even further by 2100, while the total cost to the Greek economy could reach a cumulative €701 billion by 2100. The study highlighted also the importance of implementing policies for adaptation, alongside the policies for mitigation.

## THE ECONOMICS OF CLIMATE CHANGE

This publication provides a comprehensive, state-of-the-art review of the economics of climate change, focusing on the design of economic policy aimed at controlling the climate externality. It begins by presenting approaches to modeling climate change, the ways in which the climate and the economy are modeled as a coupled system, and a literature review of the emerging area of environmental macroeconomics. There follows an overview of mitigation-related climate change policies, such as proposals for carbon taxes and cap-and-trade policies, along with an analysis of the economics of private and public adaptation which includes both adaptation policies and adaptation finance. It also sets the foundations for addressing the role of monetary policy under conditions of global warming and exploring the link between monetary policy and climate change.





# KEY WORKING PAPERS

## **STRANDED ASSETS AND THE FINANCIAL SYSTEM**

There has been a burgeoning interest and literature on the risks associated with stranded assets. This paper aims to present an overview of this literature with a focus on the risks to the financial system associated with stranded assets and why these risks need to be a concern to central banks. It considers various definitions of stranded assets and its expanding scope while focusing more narrowly on climate-related risks and how these affect the financial system. Two main channels of climate-related risks are discussed in depth: risks of physical impacts from climate change and risks associated with the transition to a low-carbon economy. Reasons why the financial system may inadequately account for these risks are presented along with corrective policies on the part of investors and central banks. The study highlighted also the importance of implementing policies for adaptation, alongside the policies for mitigation.

## **THE EFFECTS OF CLIMATE CHANGE ON A SMALL OPEN ECONOMY**

We investigate the impact of climate change on the macroeconomic performance of a small open economy. The setup is a new Keynesian dynamic stochastic general equilibrium model of a small open economy without monetary policy independence in which a climate module that interacts with the economy has been incorporated. The model is solved numerically using common parameter values, fiscal data and projections about temperature growth from the Greek economy. Our results, suggest that climate change implies a significant output loss and a deterioration of competitiveness. Moreover, it seems that the loss of monetary policy independence is not a big loss, when we investigate the short- and long-term implications of climate change for a small open economy.



# KEY WORKING PAPERS

## GREEN BONDS AS AN INSTRUMENT TO FINANCE LOW CARBON TRANSITION

The present paper examines the role that green bonds can play in financing the transition to low carbon economy. We first establish the need for central banks to respond to climate change challenges and we present the main ways in which they can get involved. We explain why green bonds should be used to instrument of choice for financing the low carbon transition, based, on the one hand, on the theoretical argument of intergenerational burden sharing and, on the other hand, on the practical need of large long-term infrastructure investments. After defining green bonds, we present their main characteristics. We then summarize the development of the green bond market in the last decade. We conclude by presenting ways in which to respond to existing challenges and barriers, so that the green bonds market develops further.

## MONETARY POLICY UNDER CLIMATE CHANGE

We study monetary policy under climate change in order to answer the question of whether monetary policy should take into account the expected impacts of climate change. The setup is a new Keynesian dynamic stochastic general equilibrium model of a closed economy in which a climate module that interacts with the economy has been incorporated, and the monetary authorities follow a Taylor rule for the nominal interest rate. The model is solved numerically using common parameter values and fiscal data from the euro area. Our results, which are robust to a large number of sensitivity checks, suggest non-trivial implications for the conduct of monetary policy.



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