THE STATE COMPTROLLER
AND OMBUDSMAN OF ISRAEL

2021

Chapter 3

# Review of Economic and Financial Risks of Climate Change and their Management by the State of Israel

Summary

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## Summary

### Background

The various forms of natural capital, including the oceans, water sources, air, soil, and ecological systems, have economic value in that they provide services to human beings and are vital for human activity. However, they are not traded on the market as commodities, and therefore are not easy to measure. These products are mostly considered as public goods - meaning that their users do not usually have a direct personal interest in preserving them, so sometimes they are degraded, or even destroyed. This phenomenon is known as "negative externalities" and reflects the economic concept called the "tragedy of the commons." The negative effect of environmental degradation has financial value, expressed in loss of social welfare. The field of environmental economics offers various solutions that assist in internalizing these negative externalities and reducing public resources degradation.

Human activity across the globe has led to emissions of GHGs and other air pollutants into the atmosphere – a major public resource. The resulting global warming and human health and environmental degradation are considered negative external effects. In terms of economic analysis, the climate crisis is a negative external effect and can be defined as a market failure – in other words, a negative effect that the free market cannot overcome on its own. Some analysts have determined that this market failure is the most significant ever in history.

Since the movement of GHGs is not contained by national borders, it creates a "free rider" effect, meaning that only the countries that reduce their emissions bear the costs of reduction and the others are "free riders," benefitting without bearing any costs. This lowers the incentive of each country to increase its efforts toward GHG reduction. This market failure also has an intergenerational aspect, as GHG emissions have a cumulative effect, and the catastrophic effects of climate change will be felt in the coming decades.

Chapter 3 addresses the economic and financial aspects of climate change caused by this market failure – for the State of Israel, its economy, and its financial system, according to the following sections:

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|---|---|---|
| **Part 3.1** | **\|** | **Economic aspects of climate change for the state; review of current global and Israeli economic assessments of the damage caused by climate change, and of mitigation and adaptation costs; effects on the employment market.** |
| **Part 3.2** | **\|** | **Carbon pricing, to promote internalization of the external costs and lead to reduction of GHG emissions, as per the Paris Agreement targets.** |
| **Part 3.3** | **\|** | **Risks to the financial system resulting from climate change.** |

These are developing fields, and the development of their methodologies and methods of analysis are ongoing globally. This influences the means of examination and the content of this chapter.

## Key figures

**2.5%-18.1%**

Estimated GDP loss by 2050 in the BAU (business as usual) scenario, without deeper GHG emissions reduction

**8.5%-27.6%**

Estimated GDP loss in the Middle East and Africa by 2050 in the BAU scenario, without deeper GHG emissions reduction, according to studies reviewed

**61**

Arrangements of carbon pricing adopted by countries, according to a 2020 World Bank study, which apply to 22% of global GHG emissions

**€ 120**

Cost of one tonne of carbon in 2030 as per the OECD recommendation, representing the effective price for global transition to a net zero carbon economy by the mid-21st century

**$3.7 trillion**

Global aggregate exposure of the 16 highest-risk sectors for carbon regulation, as of 2018, based on estimate by a major international rating company, including energy, transportation, and construction sectors

**$1-18 trillion**

Total global estimated value of "stranded assets" that will lose their value due to meeting the 2°C temperature limitation target, according to the Bank for International Settlements (BIS) (including shutdown of fossil fuel reserves)

**1,587**

Number of climate-related lawsuits submitted globally from 1986-2020 (emphasizing recent years), according to the Grantham Research Institute on Climate Change at LSE – most were resolved in favor of the plaintiffs

**0**

Number of specific environmental audits of the banking system conducted by the Bank of Israel's Supervisor of Banks since 2009, of some 300 audits performed[1]

1 Reference to environmental risk was found in six regular audits, mainly regarding legal implications. No audit addressed climate risk.

# Part 3.1 | Climate change as a result of market failure, and preparedness for the economic impacts of climate change

## Background

Climate risk is expected to influence a country's financial status through its GDP, growth rate, and budget, as climate change effects are expected to cause tangible, long-term damage to various sectors of the economy, while also harming the ability to supply products and services. In addition, climate change has a direct influence on the stability of prices in the economy. The anticipated scope of economic damage (derived from the severity of climate damage) is still unknown; therefore, uncertainty is a central component in the process of preparing for these risks. Risk management and cost-benefit analysis can support decision-making under uncertain conditions. In addition, efforts involved in addressing the climate crisis and transitioning to a low-carbon economy effect the labor market.

## Key findings

### The Climate Crisis as a Result of Market Failure

- The damage caused by GHG emissions is a result of the external influences of economic activity that are difficult to price. When emissions have no immediate real financial cost and there are no negative consequences for GHG emitters, economic actors[2] do not account for these costs in their activity. Because the cost of damage from GHG emissions is not calculated and causes negative externalities that are not immediate, this leads to market failure. The damage from emissions is not expressed in the conventional assessments of economic activity – through the product, or in the conventional time frames for economic forecasts.

2 Such as companies, financial bodies, countries, and individuals.

## Preparedness for the Economic Effects of Climate Change

- As of the completion of this audit, no government economic body or entity responsible for macroeconomic forecasts in Israel has performed a national assessment regarding the long-term damage and effects of climate change on the Israeli economy in the BAU scenario or other scenarios in which mitigation and adaptation measures are implemented. Lacking such climate-related economic assessments (on the macro level and the level of individual actions), the National Economic Council did not act to prioritize the issue in its strategic assessment, and the Ministry of Finance did not approve requests to allocate resources, including that of the CCAA.

- Current studies on climate change damage that were presented in this section of the report indicate long-term macroeconomic risks anticipated globally and in Israel as a result of climate change. The loss of global GDP by 2050 is estimated at 2.5%-18.1% in the BAU scenario. According to the studies reviewed, in the Middle East and Africa, where Israel and its neighbors are located, GDP loss is even higher and estimated at between 8.5%-27.6%. Existing assessments around the world for this damage are partial, due to the uncertainty that characterizes long-term climate change scenarios. This raises the concern that the accumulated effects of climate change on the economy will be even worse than the assessments reviewed (particularly at the highest levels of global warming). Because there is no existing model or scenario that can give a full picture of the economic effects of climate change, the risks they pose will remain largely impossible to contain. Attention must be paid to the fact that the results of the models are partial and produce forecasts that underestimate the scope of the aggregate economic effects of climate damage.

## The Cost of Implementing Mitigation and Adaptation Measures

- The economic analyses reviewed show that if Israel does not take steps to slow climate change, climate-related economic damage will be higher than the cost to the economy of the emissions reduction process. This is because a GHG reduction policy has clear benefits, and the Israeli economy can achieve significant reduction of GHG emissions without harming long-term growth targets, according to the studies. In addition, cost-benefit analysis shows that transition to a low-carbon economy can lead to a rise in GDP and social welfare.

- According to a study by the NGFS (Network of Central Banks and Supervisors for transitioning to a green financial system), a timely, gradual, and orderly transition to a low-carbon or net zero carbon economy is the scenario with the least effect on GDP. The gaps indicated by this report on the issue of GHG reduction and on carbon pricing in Israel reveal that the State of Israel is behind in comparison to other OECD countries. The physical risks of the climate crisis (BAU scenario) are expected to lead to an

estimated loss of 11% of global GDP by 2050, and 25% by 2100, according to the study. Further, the estimated damage of an orderly transition to a low-carbon economy is smaller than in the BAU scenario and in the disorderly scenario: 2% of GDP in the orderly transition scenario by 2050, as opposed to over 6% in the disorderly transition scenario, and 4% in the orderly transition scenario by 2100, as opposed to 9% in the disorderly transition. Therefore, the more Israel delays the transition to a low-carbon scenario, the higher the likelihood that the cost to its economy will be greater.

## Effects of the Transition to a Low-Carbon Economy on the Employment Market

The Ministry of Economy and Industry and the Ministry of Welfare and Social Affairs have not examined the consequences of climate change and the anticipated changes resulting from the transition to a low-carbon economy on the employment market. The transition to a low-carbon economy can have negative effects on employment in high-emissions fields. Various studies show that the negative effects on the labor market resulting from this transition can be reduced, and positive effects can even be gained. But this requires planning, determining a national policy for developing employment requiring high-level "green" skills, along with the general policy of transition to a low-carbon economy and implementation of this policy. A green policy can create jobs in a number "green" economic sectors (such as solar energy), while reducing jobs takes place mainly in "brown" sectors (such as fuel refining or aviation), whose activity is replaced by "green" sectors. For example, one study on this issue estimated that achieving the former targets that Israel set under the Paris Agreement for electricity production through 17% renewable energy in 2030 will create 16,764 jobs related to constructing solar installations, and meeting the targets for energy efficiency will directly add 1400 jobs.[3]

## Technological Climate Innovation in Israel

In 2018, the rate of public investment by the Israel Innovation Authority in the field of "energy, water, environment, and sustainability" stood at 4%, the third lowest rate of all fields reviewed. In addition, comparative statistics for other OECD countries show that in the field of "climate-related technologies", Israel ranks at the bottom of the ladder, along with three other countries. In 2016-2018, 2% of the new technologies developed in Israel were climate-related, as compared to 6% during 2000-2002.

3 See: Stanley Rubenstein (2019), "Reducing Emissions of Greenhouse Gases in Israel: Ramifications for Employment," doctoral dissertation, University of Haifa.

# Key recommendations

## Economic Assessments of Climate Change

Despite their existing limitations, performing economic assessments using models that test various scenarios is an important instrument for reducing uncertainty and for decision-making on a variety of climate-related issues. A comprehensive economic assessment is needed for long-term decision-making by all government ministries (including the Ministry of Finance) in the economic sectors, and as a tool for analysis, and determining between alternatives. The audit recommends that the Ministry of Finance in coordination with the National Economic Council and the Bank of Israel perform an economic assessment on the effects of climate change on the State of Israel in various scenarios and timeframes. Until such a comprehensive national assessment is performed, the Ministry of Finance and the National Economic Council should integrate the economic effects of climate change into their considerations, where relevant, in examining policy steps.

## Costs of Implementing Mitigation and Adaptation Measures

The market failure at the heart of climate change and its characteristics, including uncertainty and gradual degradation over decades, require the government and decision-makers in Israel to examine this issue through new tools and with a long-term perspective, so as to make decisions in the present that will mitigate future risks. The alternative is to wait until the effects of climate change become known, and according to the studies presented in the report, this is the more costly option. Even if these decisions are made under conditions of uncertainty, they should not delay the government's implementation of the necessary measures for GHG reduction and climate change adaptation, because the scientific consensus today is that without implementation of radical emission reduction policies in the coming decade, in the next few decades the climate crisis will accelerate and threaten the ecological, economic, and health systems, as well as geostrategic and geopolitical stability.

Studies emphasize the importance of timing for GHG reduction actions and the State of Israel's adaptation to climate change. According to these, reduction actions should be made at these initial stages. The type and scope of adaptation activities are expected to be implemented as a function of climate-related damage, but it is economically beneficial to begin implementing them as early as possible and gradually. This is especially true since GHGs remain in the atmosphere for a very long time (even centuries).

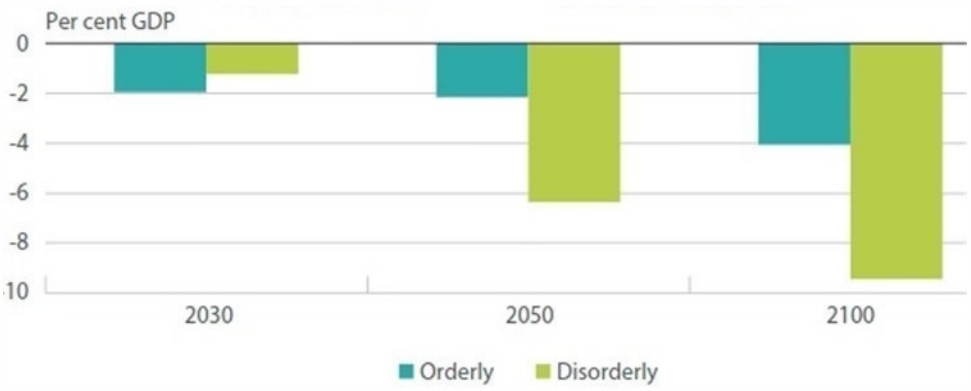
## Effects of the Transition to a Low-Carbon Economy on the Labor Market

Studies from around the world and Israel show that the transition to a low-carbon economy involves risks but also significant opportunities for the employment market. To reduce the risks and exploit the opportunities, the audit recommends that government ministries, including the Ministries of Finance, Economy, Welfare and Social Affairs, and Environmental Protection, in cooperation with other bodies such as the Israel Tax Authority and the Bank of Israel, include development of "green" employment as part of the policy of transition to a low-carbon economy. These entities should act to promote the employment issue as part of the transition. The audit recommends identifying the effects of the transition to a low-carbon economy on the employment market and analyzing the gaps in the field. Plans should be promoted to enable gradual management of gaps in the training and skills required to support the transition to a low-carbon economy, and as far as possible, to minimize the shocks to the employment market this will cause and exploit the full potential the transition contains for opportunities for this market.

## Climate Change Technological Innovation in Israel

The audit recommends that the Ministries of Finance, Environmental Protection, Economy and Industry, and Foreign Affairs, as well as the Israel Innovation Authority, in cooperation with the industrial sector and the Manufacturers Association of Israel, examine the need for action in the following fields: mapping the fields in which Israel has a relative advantage; promoting long-term, synchronized actions based on prioritization of government-wide targets and pooling of resources targeting innovation in clean-tech; and identification of knowledge gaps among the professional entities in the government ministries addressing these issues. In addition, the audit recommends that the Israel Innovation Authority complete its examination and assessment actions, and together with industry and academia, promote the implementation of its conclusions and recommendations related to clean-tech and the climate technology fields.

## Cumulative GDP Impact from Transition Risk in Orderly and Disorderly Scenarios (accordying to NGFS)




Source: NGFS, based on calculations from the Potsdam Institute for Climate Impact Research (PIK).

# Part 3.2 | **Carbon Pricing**

## Background

As mentioned, market failure is an underlying cause of the global warming phenomenon. Without regulatory intervention, the economic players do not take environmental degradation into consideration, as this degradation has no market price. From an economic viewpoint, managing global warming involves changing the relative price of the use of GHG emitting sources. This can be done by adopting policy tools for internalizing the external environmental costs of the production and emission of GHGs. As opposed to direct costs, external costs are not expressed by the market mechanism. Therefore, various calculation methods have been developed, such as those accepted by the OECD.

In the past decade, various countries have begun to use carbon pricing on industrial sectors, to meet GHG emissions targets under the Paris Agreement. They are doing so by adopting the carbon tax mechanism, which is levied on each tonne of $CO_2$ emitted into the atmosphere. This tax is levied on the use of fuel for industry, electricity production, and transportation.

Professional bodies around the world have noted the advantages of using the carbon tax. One advantage is greater efficiency of allocating resources in the economy, as the carbon tax is levied on the polluting product, and its price causes producers and consumers to internalize its external effects. Another is that carbon pricing can also act as an incentive for catalyzing entrepreneurship and innovation, encouraging the development and adoption of new technologies that enable reduction of emissions. Further, the carbon tax can be levied based on a broad tax that reflects a significant portion from the GHG-emitting sectors. In addition, the carbon tax creates certainty regarding the price of carbon, and it is relatively easy to collect. In parallel, according to some professional opinions, when imposing the carbon tax, factors related to increased electricity prices should be considered, as well as damage to local industries' competitiveness and learning the effects on GHG emissions reduction.

# Key findings

**International trends:** With time, an increasing number of countries are adopting carbon pricing arrangements. As of July 2021, 61 countries have adopted such arrangements. At the same time, EU countries are promoting a policy under which imports from non-EU trading partners will be charged a Carbon Border Adjustment Mechanism. These processes are likely to lead to a reality in which EU trade partners, including Israel, may be influenced by EU policy, and exports of goods (mainly carbon-rich) from Israel may be exposed to trade limitations.

**Processes for promoting carbon pricing in Israel:** Since 2008, a series of studies has been performed by Israeli government and professional entities to analyze the significance of carbon taxing. These studies have identified the advantages involved in this process. However, as of September 2021, no operative steps have been taken on this issue.

In August 2021, following completion of this audit, a policy paper was published on carbon pricing in Israel.[4] In addition, Government Resolution No. 286[5] was passed, determining a carbon taxing mechanism, and the Minister of Finance was charged with correcting the Excise Tax Directive on Fuel 5764/2004 and the Directive for Tax Fees and Exemptions and Purchase Tax on Goods 5777/2017. In addition, this resolution determined that the Minister of Finance must "publish the carbon tax rate on fuel in terms of tax per tonne."

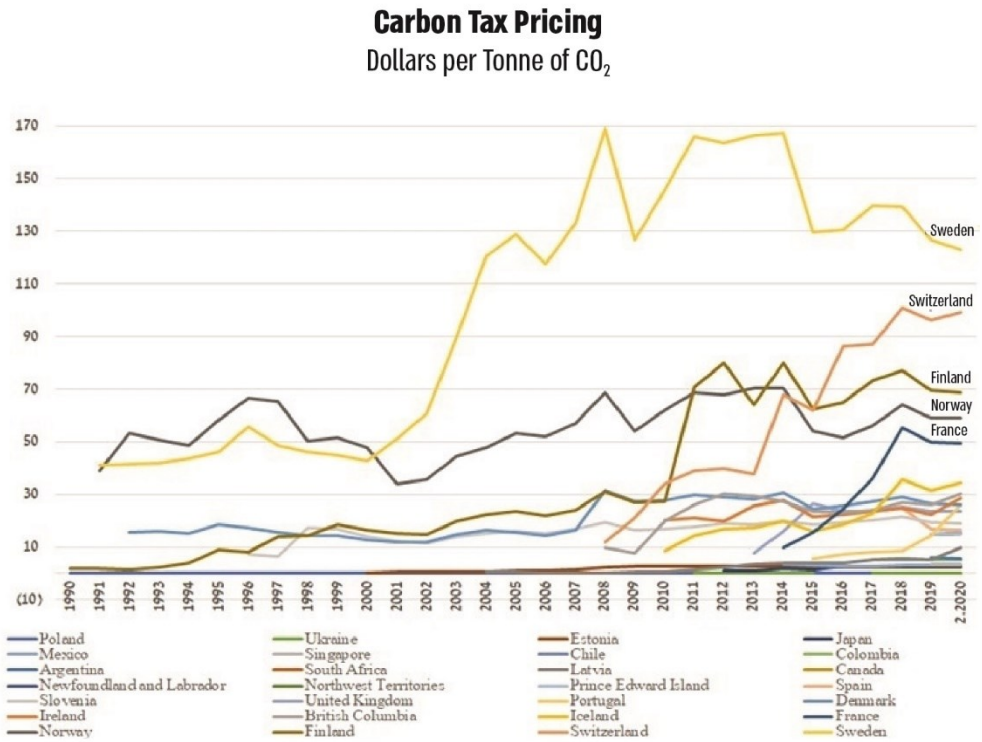
4 Ministry of Environmental Protection (August 2021), "Carbon Pricing in Israel."
See: https://www.gov.il/he/departments/news/israel_will_implement_carbon_pricing_for_the_first_time.

5 See https://www.gov.il/he/departments/policies/dec286_2021

# Key recommendations

- As part of the carbon tax reform and while determining the carbon tax rate on fuel in terms of tax per tonne of carbon, as decided in the Government Resolution, the Ministries of Finance, Environmental Protection, Energy, Transportation, and Foreign Affairs, with the Tax Authority, Electricity Authority, and the business and industrial sectors, should act to formulate recommendations based on a broad view of the Israeli economy. This includes examining the effect of carbon pricing on local industry, competitiveness, and Israeli export, and on how tax receipts are used. They should also act to formulate a system of incentives and investments, and a plan for infrastructure and available alternatives through a long-term, broad view for transitioning to renewable energy. They should also include a mechanism for examining the effectiveness of the tax pricing on the Israeli economy.

## Development of Carbon Tax Pricing from the Tax Start Date and Extent of GHG Coverage by Country




Source: Ministry of Energy, 2020.

# Part 3.3 | **Climate change as a Cause of Financial Risk**

## Background

For the past two decades, a practice of integrating principles of "responsible investment" has developed in the business activity of corporations, the stock market, and the financial system. One of the methodologies for this is the integration of ESG environmental, social, and governance (ESG) considerations in business and financial policy. This practice is sometimes known as "sustainable finance." Within ESG, climate change mostly receives special consideration from regulators and financial bodies worldwide.

The purpose of identification and analysis of these risks, particularly science-based risks such as climate risks, is to examine the risk exposure based on various scenarios that are not examined as part of the core business activities of the financial entity, company, or organization, although they may influence it deeply. In a financial institution, this purpose is to improve its agility and resilience by understanding the channels of influence and minimizing exposure to risk through improving the controls and decision-making processes in the field.

Climate change poses uniquely complex risks, as they effect many sectors, geographical regions, and assets, sometimes simultaneously. This difficulty intensifies due to uncertainty regarding climate change characteristics and the fact that standard risk assessment models, which rely on past data, will be less efficient in performing future risk assessments. Financial sectors that are threatened by the climate crisis include the stock market, the insurance field, and the banking system. This section will address the climate-related risks to financial institutions and the State of Israel as players on the stock market.

# Key findings

## General

- In general, Israel's financial regulatory directives today do not reflect climate risk. They apply to certain types of corporations (for example, public companies) and under limited circumstances (such as voluntary implementation or relating to ESG considerations as a unit without specific treatment of climate considerations). In addition, the directives do not include uniformity in disclosure and reporting, although the ability of a financial institution to relate to climate aspects in its investment, funding, or insurance policies (and ESG in general) depends on disclosure of relevant, quality information by the companies in which they invest, fund, or insure.

- The climate crisis poses financial risks to countries, companies, and individuals through two types of climate risk:

  1. **"physical risks"** – acute risks,[6] and chronic effects of long-term changes in weather patterns, which effect property, physical capital, infrastructure, agriculture, and real estate;

  2. **"transition risks"** – originating from the global transition to a low-carbon economy.[7] Today's estimates of the resulting loss of global asset value range from $1-18 trillion. The transition risks due to uncertainty regarding the technologies that will fully develop and uncertainty regarding the regulations that will be formulated are likely to effect sectors in Israel: production of petroleum products, chemicals, and their products with proceeds from sales (local and export) – NIS 67.5 billion; production of rubber and plastic products with proceeds of NIS 19.6 billion; mining and quarrying with proceeds of NIS 17.7 billion. These sectors are likely to be affected if the decision is made to impose a carbon tax; if a policy is promoted of transition to electric vehicles and production of renewable energy; or if other countries impose taxes on exports of this type of product.

- When countries join the aggressive mitigation pathway (sharp and rapid reduction of GHG emissions), the physical climate risks will decline, while transition risks will expand.

6 Originating from extreme weather events or catastrophes that cause sudden disruption and damage to human beings and property.

7 These usually relate to a decline in the value of assets, when demand drops due to regulatory changes or increased rigor of regulations to adapt them to the climate change fight; technological developments and changes that will be adopted as part of the climate change fight; or fluctuations in consumer preferences and changes in public norms related to climate.

This highlights the importance of an orderly, timely, and gradual transition to a low-carbon economy and the need to maintain control of the transition process to a low-carbon or net zero carbon economy. By contrast, if countries act according to the BAU scenario (without emissions reduction), do too little, or act too slowly to reduce emissions as this report has indicated regarding Israel, the physical risks of climate change will grow as compared to the transition risks. In response to realization of the physical risks, the need will intensify for a rapid, disorderly transition to a low-carbon economy, and the transition risks will expand accordingly.

- Israel's involvement in international activity in the field of climate-related financial risks is limited to two initiatives: the Bank of Israel joined the NGFS in October 2020, and the Tel Aviv Stock Exchange joined the UN Sustainable Stock Exchanges Initiative in early 2021. The audit demonstrated extensive international activity of other countries, in the field of climate-related financial and economic risk. Many countries exhibited broad, continuous international activity of regulators and policymakers. This activity crosses sectors and includes the field of banking, investments, insurance, and even macroeconomics, and involves hundreds of government and regulatory bodies in many countries, to transform it into a normative issue. These cooperative efforts produce professional recommendations, insights, position papers, and practical principles. As noted, the audit found that the State of Israel's level of involvement in international forums is low (except for the Bank of Israel and the Supervisor of Banks, which have been involved in diverse international activities since 2020).

## Climate Risks in the Banking System

- Since the 2009 letter sent by the Supervisor of Banks requiring banks to integrate environmental risks in their general risk management, the Supervisor of Banks has not conducted an audit specifically focused on environmental risk. The issue of environmental risk arose informally as part of six audits from 2012-2017, and none of these audits related to climate risk, which has a unique profile and complexity.

- The findings of the survey conducted by the Supervisor of Banks in 2019 revealed that its directives in the said letter sent in 2009 "were implemented in a very limited manner, mainly with regards to credit. Most of the banks reinforced processes in their regulations for identifying environmental risk aspects when granting credit, but they did not reinforce regulations for monitoring and controlling the risk." The Supervisor of Banks gained the impression that "the risk management system and the internal audit system are involved in a relatively limited manner in environmental risk management and did not define procedures for risk management from a conglomerate perspective. In addition, it was found that effective discussions were not held on the issue by the management and board of directors."

- The 2009 letter from the Supervisor of Banks did not specifically mention climate change, did not relate to horizontal, uniform implementation of the letter, nor did it detail the necessary integration mechanisms for implementing its directives. This permitted broad discretion to banking corporations and did not promote uniformity in the banking system. Since then, knowledge and practice in the climate risk field have developed widely, particularly in the field of climate risk. Still, the audit revealed that in the decade since this letter (2009-2020), the Supervisor of Banks has done almost no work on environmental or climate risks, nor has it updated its directives according to the developments of international professional entities or in other countries. In addition, it has not verified that the banking corporations implemented the directives of the 2009 letter in accordance with the international norms, as instructed.

- The audit found that the Bank of Israel balances file is not invested in ESG (sustainable and responsible) investments.

- The Financial Stability Committee headed by the Governor of Bank of Israel has not discussed the issue of climate-related financial risk.

## Climate Risks in Investments, Insurance, and Savings

- As of the audit date, the Israel Securities Authority has not conducted an audit on environmental risk and how public companies follow directives on environmental reporting.

- A study that the Ministry of Environmental Protection conducted in 2012 on 33 public companies (with significant environmental information) found significant differences between the companies' disclosure in scope and content, and that some companies did not include an environmental disclosure in their reports, or the environmental disclosure in their report was insufficient compared to their actual status. The main conclusion that arose from the Ministry's study was that the regulations must be corrected to include a precise definition of the necessary types of environmental data and level of detail, and a format for a uniform report should be proposed. The audit found that in the seven years since this study, the actions performed as suggested above regarding environmental reporting requirements applying to public companies did not lead to the suggested corrections to the regulation.

- Disclosure and reporting on integration ESG considerations in business and financial policy in the framework published by the Israel Securities Authority do not differentiate climate from other ESG considerations. In addition, a voluntary framework for ESG disclosure approved by the Israel Securities Authority allowing to report in different formats means that the companies will retain discretion on issues such as whether to disclose, the data included, frequency, format, and location of publication. Without quality and comparable disclosure that meets globally accepted disclosure principles, the Israel Securities Authority is likely to face difficulty promoting an investment policy that

accounts for climate aspects, and the companies will not be required to improve their performance to attract investors.

The 2007 directives for the Capital Markets, Insurance, and Savings Authority[8] did not relate to climate aspects and did not include directives for the format of the ESG report that should be published. It did not specify whether to include climate aspects, nor did it include a uniform format for the report. In addition, the audit did not find that the Israel Securities Authority acts on climate risks for additional aspects aside from disclosure, such as directives to insurers or pension funds, to include climate risks in their risk management policy.

In October 2020, the Bank of Israel joined the NGFS.

In 2020-2021, the Supervisor of Banks increased activity on the issue, and implemented various actions, most during and after this audit. These included several actions for learning the issue of climate-related financial risk and international activity in the field. In December 2020, the Supervisor of Banks sent a letter of to the banking institutions on "Managing Environmental Risk," with a declaration of its intention to hold discussions with them on environmental risk and their preparation for meeting supervisory expectations, including those detailed in the documents of the international supervisory authorities. In addition, the Supervisor of Banks decided that in the 2021 annual work plan, "the issue should be included in the work plan as a separate topic, including allocation of clearly defined time and resources for addressing it." The Bank of Israel's Policy and Planning Committee formulated a regulation draft for "Proper Banking Management" on "Managing Environmental Risks." As of August 2020, this draft includes directives on climate risks.

In early 2021, the Tel Aviv Stock Exchange joined the UN's Sustainable Stock Exchanges Initiative.

The call for papers on disclosure of corporate responsibility and ESG risks published by the Israel Securities Authority in July 2020 was shared with the public, and included 11 questions for consultation.

During the audit, in early February 2021, the Capital Market, Insurance, and Savings Authority publicized a draft amendment for instructions of the Special Circular,[9] which

8 The Israel Securities Authority guides each institution to declare in its investment policy that it will publish whether it relates to ESG aspects, and if so, detail their nature and the activity involved in their implementation. A 2007 directive, designated for the investments committee in institutions, determines rules for identifying exposure due to a borrower's failure to follow rules and regulations, including in the environmental protection field.

9 The Special Circular is the regulation code that contains the instructions of the director of the Capital Market, Insurance, and Savings Authority, and includes all regulatory directives for the supervised bodies.

suggested to oblige the investment committee of an institutional investor to include a policy that relates to ESG aspects when determining its general investment policy.

# Key recommendations

## General

- In the range between the BAU scenario (scenario 8.5 of RCP – which states that without actions for GHG emissions reduction, a high concentration of GHGs is produced in the atmosphere, and this leads to rising temperatures due to the maximum level of GHGs in the atmosphere) and a scenario of aggressive mitigation (net-zero carbon by 2050 in scenario 2.6 RCP, rise of up to 2°C), there is a range of physical climate risks and transition risks that create financial and economic risks of unestimated scope. The audit recommends that the Prime Minister's Office, the National Economic Council, the Ministry of Finance, and the Ministry of Environmental Protection, together with the financial regulators, perform an analysis of the physical risks of climate change and the transition risks, based on several scenarios, and assess the financial and economic significance they involve. In doing so, these bodies should survey the actions and tools presented in the report, select the most effective tools for managing the issue, and formulate plans for implementing them. If needed, they should obtain the assistance of the Ministry of Justice for legal clarifications regarding actions required.

- The audit recommends that the Ministry of Finance, the Securities Authority, and the Capital Market Authority consider the possibility of joining relevant international forums, for the purpose of promoting Israel's adaptation to climate-related financial and economic risk. They should study the outcomes of these entities and their implications for Israel, and the need to implement the recommendations to address the climate-related financial risks in Israel and minimize them. The audit recommends that the regulators study the current developments in other countries that aim to upgrade their management of climate risk, and that the response they promote should fit these developments. Implementation of these actions might reduce the exposure to climate risks (especially transition risks) and ensure that the transition to a low-carbon economy will be orderly and gradual, while taking action to protect public funds and invest it against the risks likely to arise due to the climate crisis.

- Application of complementary tools by the regulator should be considered. For example, financial regulators can create a market of financial products, and adopt and encourage standardization and international versions of "green" financial products. Simultaneously, the state can encourage use of the standardization that is being developed around the world in the field of underwriting green financial products, while promoting certification and training of professionals in this field.

- Considering the developing global recognition of climate-based financial risk and this global development, the audit recommends that the regulators act in their legal role and capacity to preserve the stability of the financial system and the handling of climate and environmental risks that threaten it. In addition, to reinforce this groundwork, the audit recommends that in formulating Israel's climate reduction targets and policy for 2030-2050, the Ministries of Energy and Finance should specifically address the relationship between climate change and economic and financial aspects (for the state and for the financial system).

- The audit recommends that the Ministry of Finance and the Bank of Israel examine the climate-related risks to their economic and financial activity, since these fields are also exposed to climate risks. They should do so, for example, in formulating the state budget and the tenders it publishes; the infrastructure it promotes; the bonds it issues; and the grants, incentives, and benefits it allocates in all sectors of the economy; and in managing the nostro and public reserves of government and regulatory entities (for example, the Bank of Israel) and government companies. The audit further recommends that public funds used for this activity should be managed while considering the risks presented in this section.

- The audit recommends that the financial regulators and the Ministry of Finance consider creating a joint professional platform for a work framework to promote coherence in the field. Ongoing cooperation and coordination between these entities is important for promoting a shared language, uniformity in risk definition, and building capabilities and knowledge in a relatively new field. The audit recommends that the Financial Stability Committee promote cooperation between the financial authorities for uniform definition of systemic risks related to climate; analyzing, assessing, and monitoring them; promoting implementation of studies by the financial supervision authorities – for example, on the financial system's readiness for these risks; and coordinating development and implementation of tools and methods for prevention or reduction of these systemic risks. These tasks should be done with the assistance of implementation bodies from among the committee members.

## Climate Risk in the Banking System

- The audit recommends that the Bank of Israel and the Supervisor of Banks continue to examine the guidelines that develop through international activity on the issue of climate-related financial risk and analyze the trends that develop from other countries' practices. Based on this: (a) The Supervisor of Banks should update its directives to the supervised entities to promote integration of climate risks, and set monitoring principles for itself on this issue. (b) The Bank of Israel should consider integrating sustainability aspects in its investment portfolios. (c) The Bank of Israel should initiate cooperative efforts with financial regulators and other relevant bodies on the climate change issue. (d) The Bank of Israel should examine aspects of banking system stability with regards to climate

change, and on this basis, derive additional actions such as performing stress tests and promoting disclosure rules.

The audit recommends that the Governor of the Bank of Israel, in his role as a government advisor on economic issues, act to promote the State of Israel's climate risk adaptation in additional relevant fields.

## Climate Risk in Investments, Insurance, and Savings

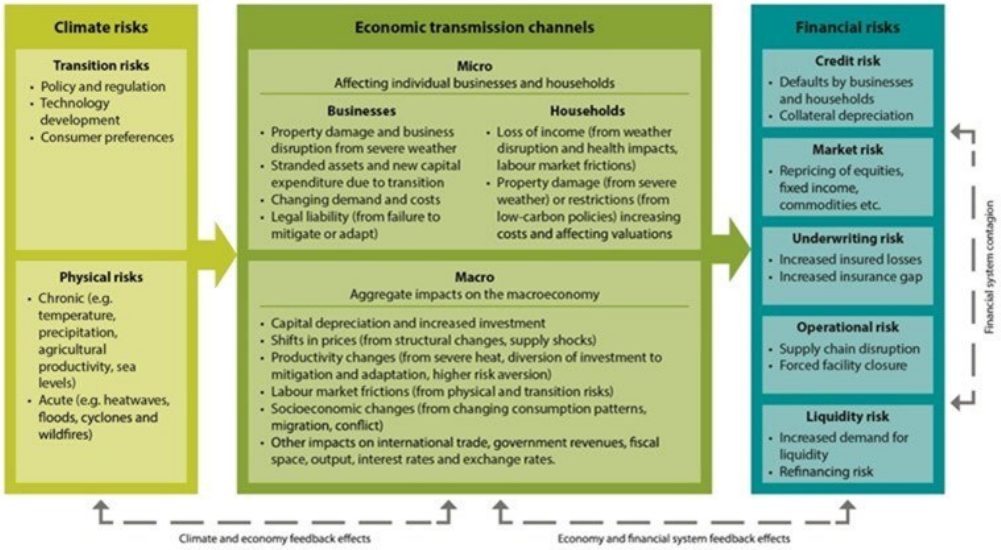
The audit recommends that the Israel Securities Authority recognize that the voluntary disclosure framework for environmental issues is inferior compared to the previous framework which promoted environmental disclosure, as the previous framework also included amending primary legislation to impose disclosure obligations on environmental issues based on uniform criteria, which would also have granted the Authority supervisory authority on the issue.

The audit recommends that the Israel Securities Authority work with the Ministry of Justice to lead examination of the means to promote disclosure obligations and uniform reporting of climate aspects, in light of the economic risks caused by climate change, their connection to loss of investment value, and the international developments in this matter as reviewed in this report. The climate disclosure rules can differ in severity, application, and scope from the other aspects of the UN Sustainable Development Goals (SDGs), which will reflect the increased climate change risk and transition to a low-carbon economy. In this regard, the audit recommends examining adoption of the principles underlying the rules of disclosure that are becoming prominent in the world, including the Task Force on Climate-Related Financial Disclosures (TCFD) recommendations. Further, the audit recommends that the Ministry of Justice lead a joint study with the Securities Authority and the Capital Market Authority, regarding imposition of the climate-related disclosure and reporting obligations on non-public companies as well, including government companies, based on criteria such as size or level of exposure to climate risk.

The audit recommends that the Capital Markets Authority complete publication of the special circular in a manner that will include addressing the financial risks caused by climate change (physical risks – mainly to the insurance sector, and transition risks – mainly to assets and investments). As such, the audit recommends that the Capital Markets Authority consider issuing directives and formulating policy tools related to ESG considerations in a differential manner that fits the risk severity – so that climate change, which receives a special position globally due to the risk severity, will receive a response from the Authority that is appropriate for the risk severity. The audit also recommends that the Capital Market Authority consult with the Ministry of Justice regarding integration of ESG considerations in investment policy vis-a-vis the issue of institutional investors' trustee obligation, and to integrate into the directives the requirement for knowledge

and expertise, as accepted around the world in this field. Finally, the audit recommends that the Capital Market Authority also examine promoting the integration of climate considerations based on the above-mentioned considerations, with regards to non-bank funding for the entities it supervises, particularly funding of infrastructure projects.

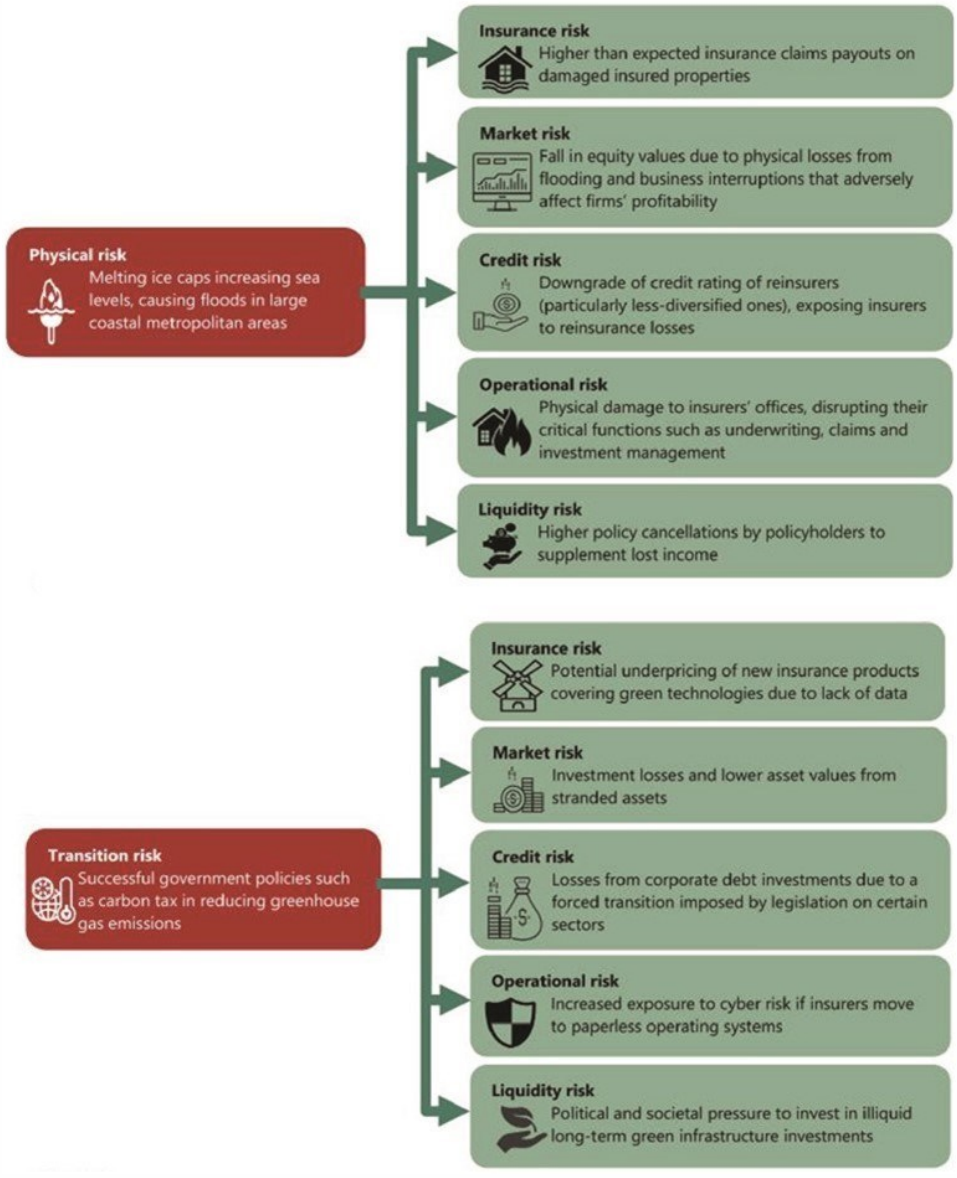
## Transmission Channels: Climate Risks to Financial Risks




Based on data from the Network for Greening the Financial System (NGFS),[10] compiled by the State Comptroller.

10 "NGFS Climate Scenarios for Central Banks and Supervisors," June 2020.

## Examples of potential physical and transition climate risks in the insurance sector




Based on data from the Financial Stability Institute of the Bank for International Settlements, compiled by the State Comptroller.

# Conclusion

Countries, regulators, financial entities, and international and national organizations around the world agree that climate change poses economic and financial risks to the economy and financial system. Extreme weather events and frequent natural disasters, along with the transition from an economy based on GHG emissions to a low-carbon economy, are likely to lead to negative effects on financial stability and loss of value to assets and infrastructure. This audit recommends that these entities relate to climate risks in parallel to the other ESG considerations. The adaptation of Israel's government and financial regulators to these potential risks is mostly at its initial stages. The various entities should correct the deficiencies noted in this chapter, and the audit recommends that they examine the recommendations, which will influence their readiness and economic-financial resilience with regards to the climate crisis in the coming decades.