New NGFS scenarios (Phase 4): economic impacts for France

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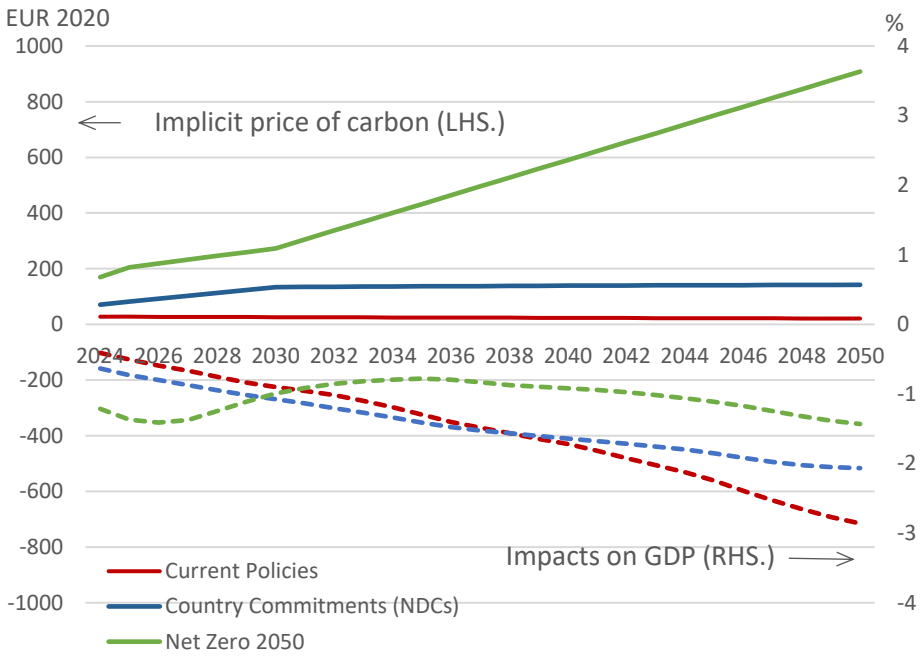
In late 2023, the Network for Greening the Financial System (NGFS) updated its climate scenarios so that the impacts better reflect the cumulative delays in deploying the low-carbon transition. These show that an early and orderly transition – although costly in the short term – is always preferable to inaction, which is harmful in the long term. This blog post outlines the impacts for France.

Chart 1: Carbon price (left-hand scale) and Impacts of NGFS scenarios on French GDP (right-hand scale)



Source: NGFS Phase 4, REMIND-NiGEM.

Note: The price of carbon (left-hand scale, unbroken line) is in EUR 2020 prices. The impacts on French GDP (right-hand scale, dotted line) are in % deviation from a baseline scenario with no physical risk or transition policy.

The Network for Greening the Financial System (NGFS) comprises a group of central banks and supervisors whose purpose is to contribute to the development of environment and climate risk management in the financial sector and to support the transition to a sustainable economy.

NGFS scenarios model energy, economic and climate systems in order to represent plausible futures. They are divided into four categories: orderly transition scenarios,

where the transition begins immediately and progresses gradually; disorderly transition scenarios, where the risk is higher because the transition is delayed; "hot-house world" scenarios, where there is no transition and there is major physical risk; and "too little, too late" scenarios, with high transition and physical risks.

The NGFS updated its climate scenarios in November 2023 to include: (i) the impacts of the war in Ukraine and new climate policies announced, (ii) a more restricted use of carbon capture technologies to reflect the uncertainty associated with their deployment, and (iii) more effective modelling of extreme weather events. Two new scenarios have been added: an orderly low-demand scenario which has yet to be modelled at macroeconomic level, and a transition scenario without any coordination between countries, which fails to limit physical risks.

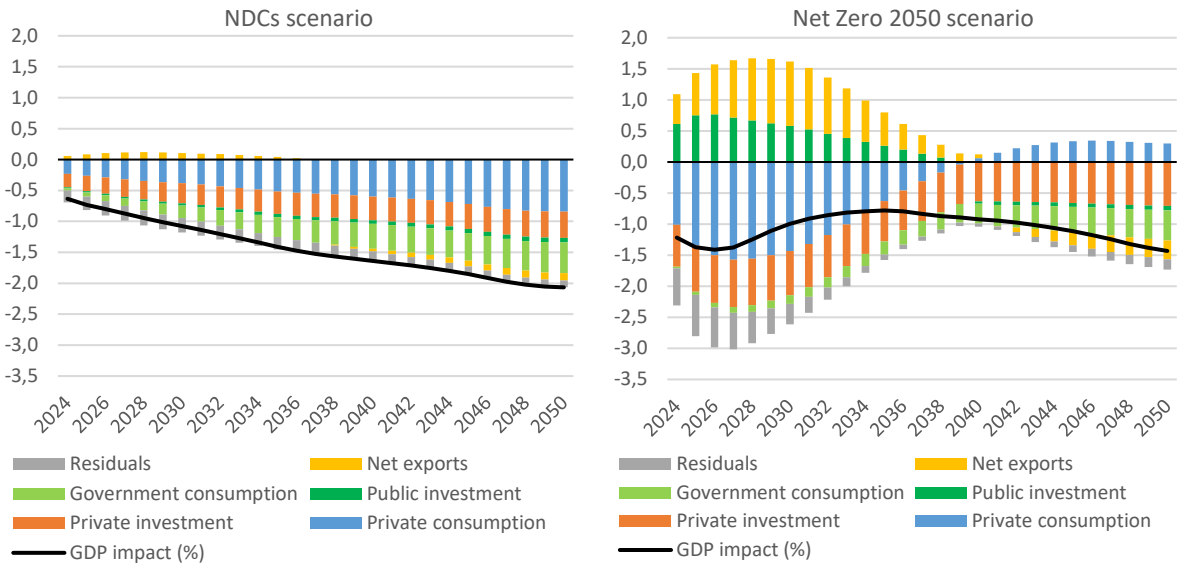
Taking account of cumulative delays as well as new policies announced

Fossil fuel emissions are expected to decrease by less in the short term than projected in previous versions of the scenarios. In France, the Current policies scenario forecasts a 17% drop in CO2 emissions from energy sectors between 2020 and 2030 (compared with a drop of 27% forecast previously). According to the Haut Conseil pour le Climat, the pace of reduction needs to almost double to bring France into line with the objectives of the European Fit-for-55 package. The updating of the French National Low-Carbon Strategy scheduled for 2024 should include these elements in principle.

This initial delay will make it more costly to achieve the climate objectives, hence the higher implicit carbon price in NGFS scenarios, reflecting the additional transition efforts required. For France, in the Net Zero 2050 scenario (NZ), the carbon price reaches EUR 270 in 2030, and EUR 910 in 2050 (in 2020 prices, see Chart 1). GDP losses are greater in the short term in the NZ scenario, i.e. -1.4% in 2025 in France, compared with a no climate risk scenario, because private demand falls in response to the more ambitious carbon pricing policies. This drop in demand is only partially offset by an increase in public investment and net exports (see Chart 2, right-hand panel). Between 2040 and 2050, the contribution of consumption turns positive once again, while the other components of demand contribute to a permanent fall in GDP totalling 1.4% in 2050 when compared with the baseline scenario.

As countries' transition commitments have also evolved, the National Determined Contributions scenario (NDCs) has become more ambitious, with a carbon price for France of EUR 134 in 2030 (at 2020 prices), reflecting the Fit-for-55 plan. However, this scenario does not yet comply with the Paris Climate Agreement and would see average global warming of 2.4°C by 2100. Here, all GDP components fall over virtually the entire projection horizon, so that GDP losses total 2.1% in 2050 (see Chart 2, left-hand panel).

Charts 2 Impact of NDCs and Net Zero 2050 scenarios on French GDP



Note: GDP deviation as a % of a baseline scenario with no physical or transition risk. The bars indicate the contribution to GDP deviation. The impact of acute physical risks is not included here.

Source: NGFS Phase 4-REMIND-NiGEM

Net Zero vs NDCs: two investment and inflation narratives

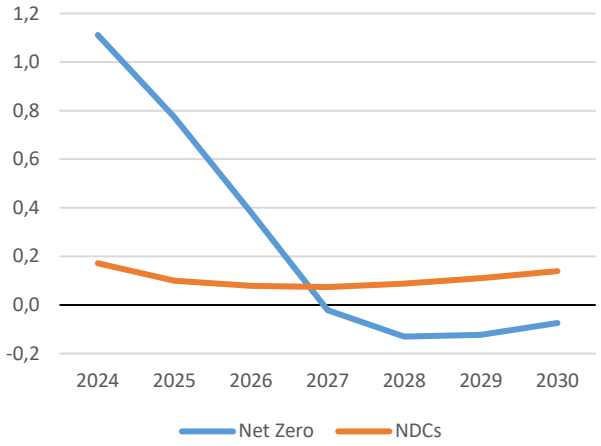
The different macroeconomic dynamic between the NZ and NDCs scenarios is attributable in particular to the investment profile. In the NZ scenario, public investment increases (by between 0.4 and 0.8 percentage points of GDP per year over ten years) following recycling of a portion of the revenues linked to the carbon price.

These amounts are lower than the estimated investment needs for France: between 2 and 2.5 points of GDP – public and private sector combined – by 2030 (see Pisani-Ferry-Mahfouz, 2023, I4CE, 2023). It should be noted that these figures are generally based on sector estimates, whereas the NGFS provides more aggregated estimates.

The NZ and NDCs scenarios also differ in terms of their inflation dynamics. In the NDCs scenario, the impact on inflation is low (between +0.1pp and +0.4pp by 2030). However, the NZ scenario requires more aggressive and immediate transition policies, and inflation rises relatively sharply in the short term (see Chart 3). The shock to inflation (around +1pp over two years) is subsequently absorbed by the reaction of monetary policy, as key rates in the euro area rise by between 100 and 150 basis points between now and 2030. This impact on inflation reflects the pressure on production capacity arising from the immediate introduction of carbon pricing measures. Nevertheless, there is still a great deal of uncertainty about the extent of the inflationary effects of the transition (see Dees et al, 2023), which will depend on the type of transition policy deployed, changes in the costs of using

green energy and the reaction of agents (i.e. whether or not they anticipate the transition).

Chart 3. Impact of NZ and NDCs scenarios on inflation in France.



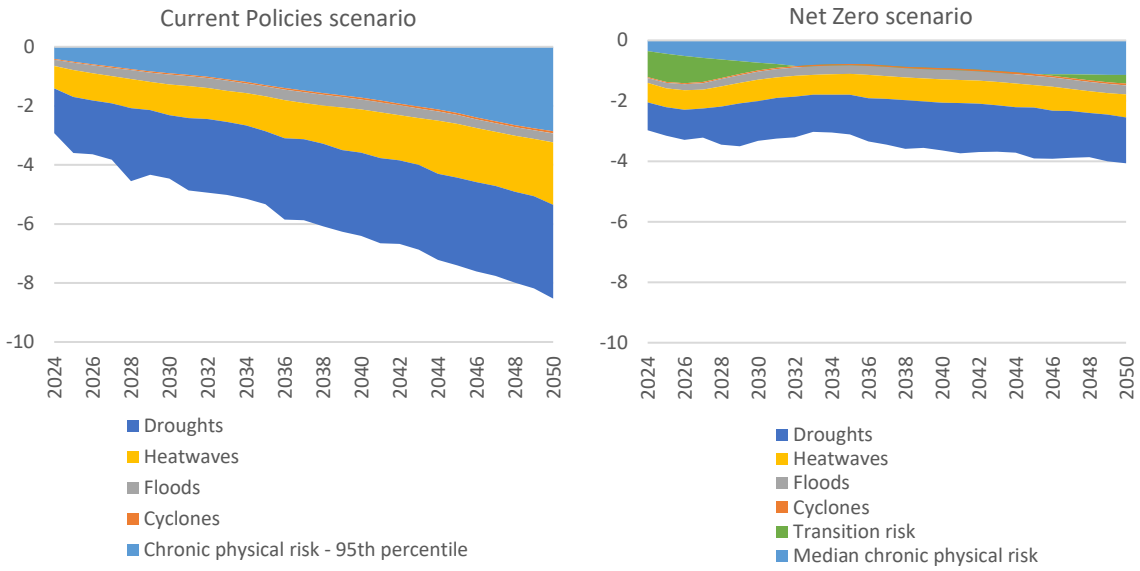
Note: Deviations from baseline in p.p.
Source: NGFS Phase 4

Higher cost of inaction due to greater physical risks

While transition policies do have an economic cost, NGFS scenarios show that this will be much lower than the cost of inaction. The Current policies scenario, where no new climate policies are deployed, is used to measure these climate change-related costs. A distinction is made between chronic physical risk (e.g. reduced labour productivity due to global warming) and acute physical risk (e.g. extreme events such as cyclones or heatwaves). Chronic physical risk is measured using the Kalkhul & Wenz (2020) damage function. For France, it would have a negative 2.9% impact on GDP in 2050 in the Current policies scenario, and a negative 1.1% impact in the NZ scenario. As regards the risks associated with extreme events, NGFS scenarios include four types of hazard: riverine floods, tropical cyclones, droughts and heat waves. For each one, NGFS models the increase in their frequency and intensity linked to global warming, and their impact on the real economy (e.g. through droughts that affect agricultural productivity). In the Current policies scenario, the events with the greatest impact on the French economy would be droughts (-3.2% of GDP), heat waves (-2.1%) and floods (-0.3%).

In cumulative terms, the impact of physical and transition risks on GDP in 2050 would be -8.5% in the Current policies scenario, compared with -4.1% in the NZ scenario (see Charts 4).

Charts 4 GDP losses in the Current policies and Net Zero scenarios



Note: GDP deviation as a % of a baseline scenario with no physical or transition risk, by type of risk modelled. The impacts of extreme events correspond to the 90th percentile of the distribution.
Source: NGFS Phase 4

Next stages

NGFS scenarios are being continuously enhanced, but there is still room for improvement, especially concerning the modelling of physical risks and the inclusion of adaptation plans. In the next version of the scenarios in 2024-2025, the NGFS should provide better sectoral disaggregation, improve the modelling of physical risks, and develop short-term scenarios to study the macroeconomic and financial implications 3-5 years ahead of the transition and extreme events.