#IKEMClimateFinanceWeek

Tracking investment to meet 2030 energy & climate targets in Germany, Czechia & Latvia

National level I

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In 2020, EU Member States released National Energy and Action Plans (NECPs), which explained how each state would meet the 2030 energy and climate targets. From 2018–2021, the Institute for Climate Protection, Energy and Mobility (IKEM), Czech Technical University in Prague (ČVUT), Riga Technical University (RTU), and Climate&Company participated in the joint project Climate Investment Capacity 2030, which provided evidence-based information for the development and implementation of NECPs in Germany, Czechia and Latvia. The project results were co-designed with national policymakers, the financing sector and other stakeholders to address specific needs, share expertise and integrate findings into decision-making.[1] *The analysis covered the following aspects:*

- *investment needs to reach the 2030 climate and energy targets,*
- *investment maps to track public finance and private investment flows into climate and energy transition actions,*
- *capital raising plans to close the gap between the need and the current investment flows, and*
- *investment and policy plans for the most carbon-intensive industrial branches.*

To understand the status of Germany, Czechia and Latvia regarding the financing of 2030 energy and climate targets, we tracked and mapped the flow of investments in climate actions and the energy transition for the most recent years for which data were available. We used a bottom-up approach, tracking actual disbursements at technology level and aggregating them at sector level. This approach was introduced by the Climate Policy Initiative, which in 2011 began to track these flows at global level using the Landscape of Climate Finance diagram. The approach was used to assess domestic investment in Germany for 2010 and in France from 2015. Our investment maps provide a snapshot of the investment flows from the sources of capital through relevant intermediaries and financial instruments to the recipient technologies. We considered climate-specific investment in actual technologies targeting or resulting in greenhouse gas (GHG) emissions reductions, excluding 'soft measures' such as information campaigns. We compared the investment flows and the investment needs based on information in the relevant literature and supplemented these with our own estimates.

Germany[2]

The data on investment in energy transition and climate actions were assessed for 2016 and compared to a similar assessment conducted for 2010 by the Climate Policy Initiative. The investment map covered the whole economy.

Capital invested

Based on the climate-specific investment flows traced, there was a 16% increase in volume in 2016 (EUR 42.7 billion) relative to 2010 levels (EUR 36.7 billion). These volumes reflected the share of incremental investment in energy efficiency (EUR 8.5 billion), the total investment cost of renewable energy deployment (EUR 25.0 billion) and the total investment cost of non-energy-related mitigation and cross-cutting measures (EUR 9.3 billion). Relative to 2010 investment, the volume of flows to renewable energies decreased by 6%, while the volume of flows to energy efficiency increased by 18%.

Main investors

The private sector accounted for 83% of total investment (EUR 52.3 billion); the remaining 17% originated in the public sector (EUR 10.9 billion). Corporate actors were by far the largest private investors (EUR 35.2 billion), followed by households (EUR 17.2). In the public sector, the German government budget played the largest role (EUR 4.2 billion), followed by the EU budget (EUR 2.7 billion).

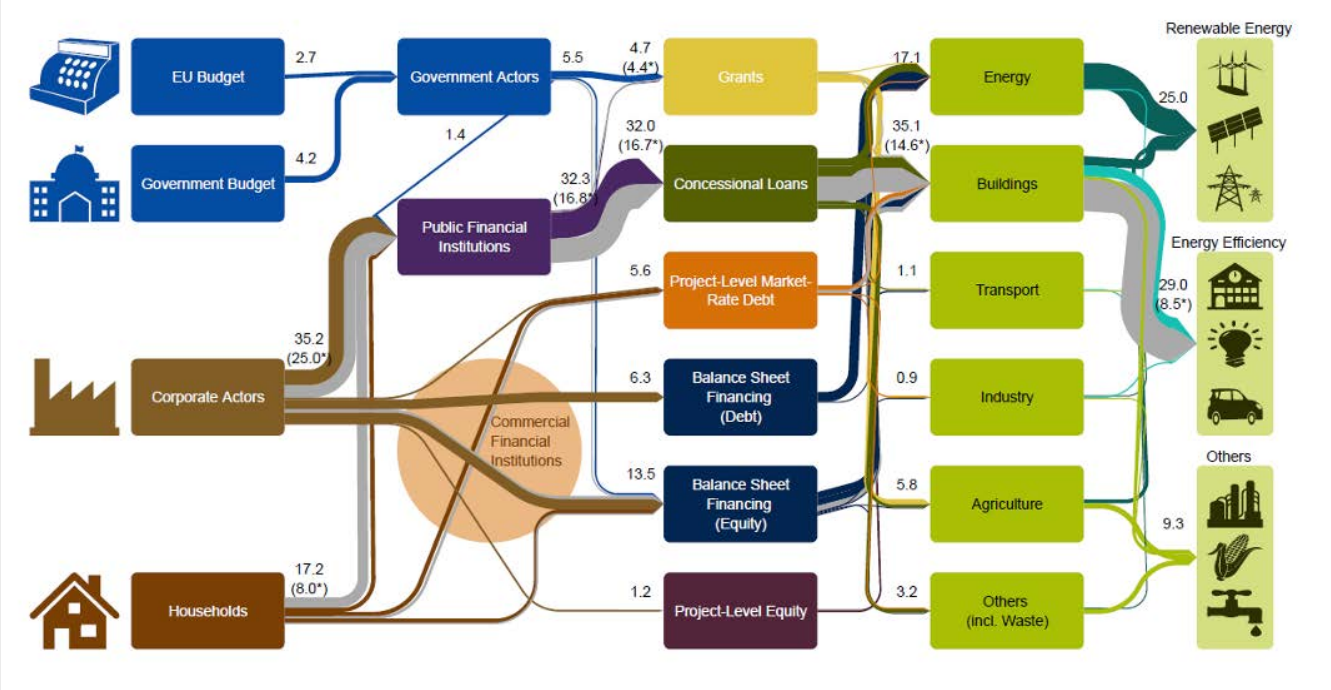
Financing instruments

In 2016, both low-cost debt (EUR 32.0 billion) and grants (EUR 4.7 billion) offered by public actors played an important role in driving climate investment. Germany is characterised by strong public promotional banks at federal level (e.g. KfW, Rentenbank, 16 state-level promotional banks and a large number of commercial banks). Altogether, public banks disbursed EUR 32.3 billion to support climate-specific investment. Due to a lack of data, there is significant uncertainty surrounding the EUR 26.6 billion delivered through other financial instruments, such as balance-sheet financing, project-level equity and market-rate debt, for which the estimates are indicative.

Remaining gap

Regarding the centralised energy supply sector, investment in renewable electricity generation and grid infrastructure was on track to reach the targets. This was not the case, however, for investment in renewable heat production. For energy-using sectors, investment was unlikely to be on track. Caution must be exercised when comparing investment needs with the recent investment, because estimates of investment needs depend on numerous assumptions and in particular on the factors included in the baseline and incremental cost definition.

The 2016 climate and energy investment map for Germany (in billion EUR)



Notes: All financial flows (except for those in grey) and figures (except for those with asterisks) represent total tangible investment (including public support) in the reduction of GHG emissions and an increase in carbon sinks, with two exceptions: blast furnaces and newly built power plants in the manufacturing sector and electrical appliances in the buildings sector. The grey flows and the numbers with asterisks represent incremental investment in the energy efficiency of buildings. Please see all notes in the respective report.

Czechia[3]

Similarly, we assessed 2017 data on climate-specific investment in Czechia. We covered two sectors: buildings, including renewable technologies integrated into them, and centralised renewable energy supply and infrastructure.

Capital invested

In 2017, EUR 612 million was invested in the decarbonisation of the buildings sector, including energy efficiency, renewable energy installations integrated in buildings, and fuel switch in buildings. Investment in the centralised renewable energy supply and infrastructure sector was estimated at only EUR 98 million – significantly lower than the investment levels before 2013. An additional EUR 100 million was invested in built-in PV installations, biomass boilers and heat pumps in the buildings sector.

The largest share of the investment volume flowed into energy efficiency (EUR 447 million). The latter exceeds the amount of the investment in renewable energy installations and infrastructure (EUR 202 million) and fuel-switching in buildings (EUR 61 million). Of the amount invested in building envelopes, 87% of the volume was invested in retrofits of existing buildings and 13% of it was invested in measures in new buildings.

Main investors

The main source of investment tracked was private investors, consisting of households and corporate actors, which contributed 60% of the total investment (EUR 419 million). The rest of the investment flowed from public sources, mainly from EU funds and Czechia's public budget, including budgets at national, regional and local levels. The main intermediaries assisting in the use of instruments were ministries and their agencies, as well as the capital market.

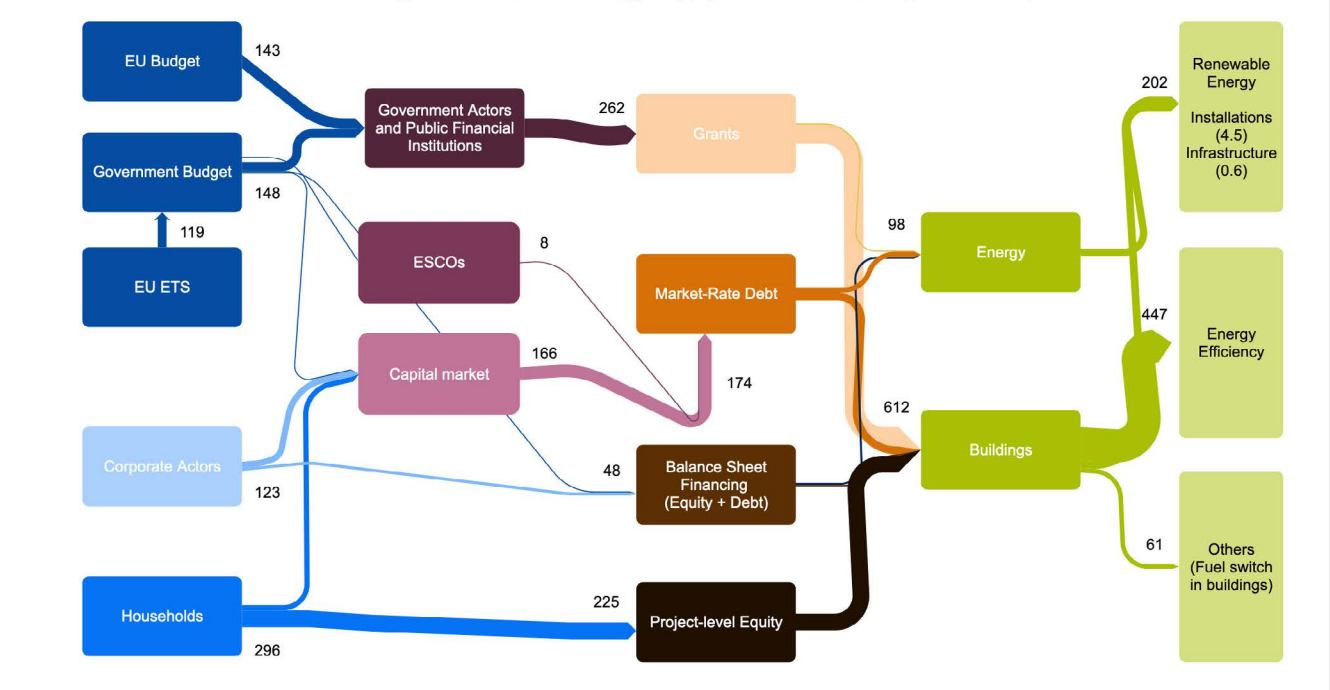
Financing instruments

Grants offered by public actors played an important role in driving energy and climate investment in Czechia. This was particularly the case in the buildings sector, for which direct subsidies (grants) represented 56% of total sector investment (excluding appliances), with 90% of flows from public sources.

Remaining gap

The investment volume in the retrofit of existing buildings was insufficient to decarbonise the building in line with the targets. The current renewable policy also does not appear to trigger sufficient investment in renewable energy. In the buildings sector, the level of investment would have to roughly double to reach the 2030 targets; in the case of the renewable energy supply, the investment would have to be six times higher than 2017 levels.

The 2017 climate and energy investment map for Czechia (in billion EUR)



Note: All financial flows represent total tangible investment (including public support) in the reduction of GHG emissions, except electrical appliances, for which incremental flows were tracked. Financing of intangible measures is excluded. Please see all notes in the report.

Latvia[4]

We also calculated climate-specific investment in Latvia for 2018. We covered two sectors: the centralised renewable energy supply and the infrastructure and buildings sectors, including residential, public, commercial and industrial buildings.

Capital invested

In 2018, at least EUR 231 million was invested in GHG measures in both sectors. Of this volume, EUR 190 million was invested in energy efficiency in the buildings sector, including in the thermal efficiency of new and existing buildings, fuel-switching to low-carbon energy carriers, and energy-efficient appliances. Roughly EUR 41 million was invested in renewable electricity generation, transmission and distribution, and renewable heat production and distribution accounted for in the energy balance of the energy transformation sector. The latter volume included EUR 21.1 million invested in the Daugava hydroelectric power station. The technologies and projects that received the greatest investment were thermal efficiency retrofits in the buildings sector; in the energy sector, the largest flow was into bio-energy projects.

Main investors

Of the total investment volume, the public sector was identified as the key investor, with EU funds contributing 42% and the national budget providing 29%. Notably, investment in the improvement of public buildings accounted for 42% of total investment, i.e. the public sector supplied a large amount of investment to improve the efficiency of its buildings with smaller shares channelled to other destinations. Only 29% of the total volume flowed from the private sector, mostly from corporations.

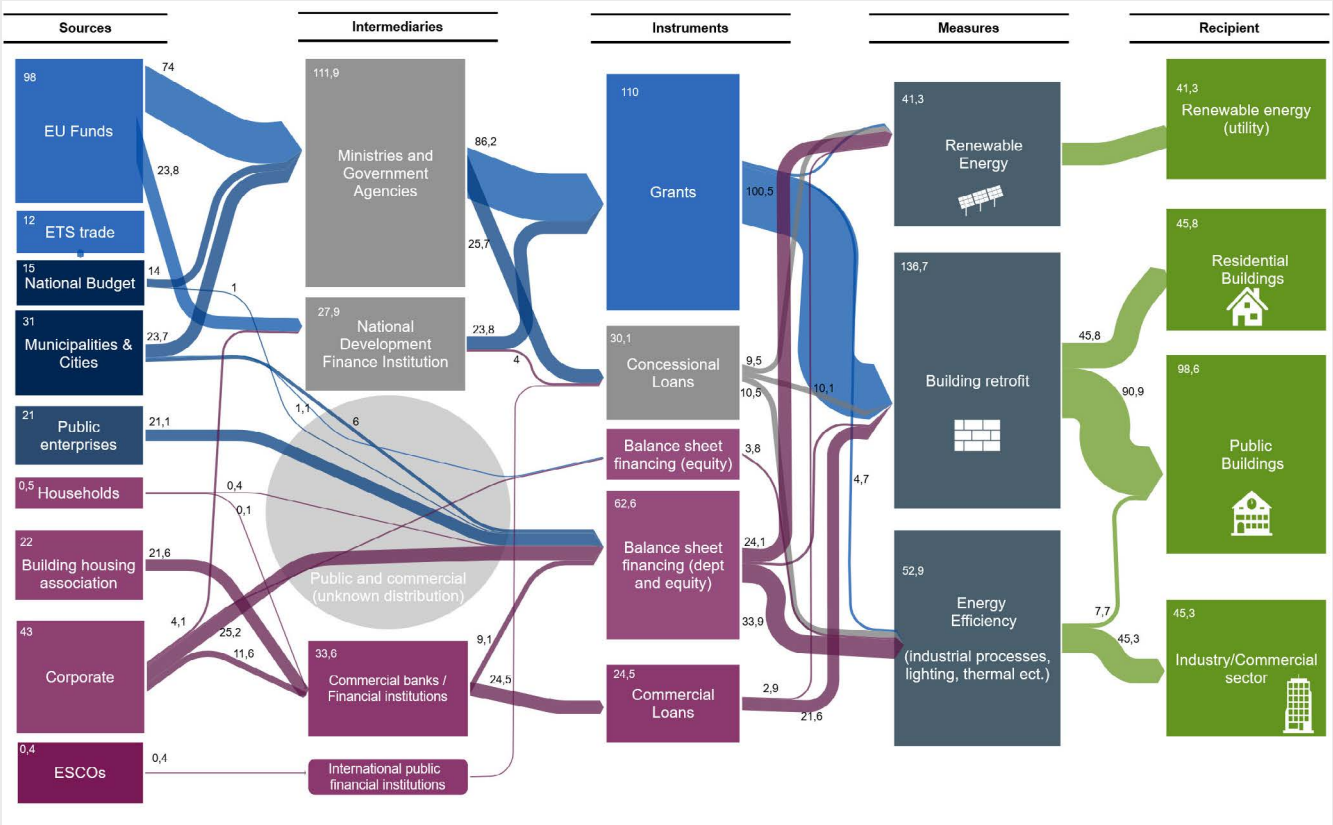
Financing instruments

EU funds played a significant role, with EU grants accounting for 42% of the climate-specific investment flows of Latvia. These grants supported a large share of the rest of public and private investment; the latter co-financing was provided most often in the form of balance sheet and commercial loans. There is currently no information available on investment made by any private parties in projects unrelated to the use of EU funds. This situation may change in the future due to the establishment of the first non-grant financial instrument to finance energy efficiency and renewable energy projects by the Latvian Development Finance Institution (ALTUM) and the Latvian Baltic Energy Efficiency Facility (LABEEF).

Remaining gap

Based on a comparison of the recent investment with the investment needed, it appears that Latvia is not on track to meet the 2030 energy and climate targets. Cumulatively for two sectors, Latvia must at least double its investment flows to reach these goals. The challenge is particularly critical for renewable energy: to meet its targets, Latvia must increase its investment by a factor of nine.

The 2018 climate and energy investment map for Latvia (in billion EUR)



Note: All financial flows represent total tangible investment including public support in the reduction of GHG emissions, with the exception of electrical appliances, for which incremental flows were tracked. Financing of intangible measures is excluded. Please see all notes in the report.

Lessons learned

We found that a map of energy and climate investment was a useful tool to understand how investment and investment patterns address domestic climate commitments. It is therefore a promising method to consider in the preparation of National Energy and Action Plans. The maps may help to identify a deficit or an excess of investment in sectors and/or in specific technologies. Overall, the diagrams could serve as a guide for an effective shift of financial incentives and an efficient design of policy instruments.

The comparison of national landscapes illustrates different pathways towards an energy transition. In Germany, the map indicates the central role of the KfW bank, the main public financial institution, in structuring the 'onlending' (intermediated lending) model through the local branches of private banks, increasing the significance of low-interest concessional loans and corporate actors as the main investors. According to the maps, the key role in Latvia and Czechia is played by investment supported with grants from the European Structural and Investment Funds (ESIF) and disbursed through government-owned financial institutions.

The EU Taxonomy of Sustainable Activities was not yet available when the maps were designed. The definitions of climate finance and tracking boundaries were determined by us for each country in line with key national strategies and plans. One of our conclusions was that there is a need for common definitions and methodologies, including a definition of climate finance and a determination of how and to what extent climate-related measures should be accounted for, as well as a method for calculating additional and incremental costs, which contribute to the energy transition beyond the business-as-usual case. The EU Taxonomy adopted in 2020 addressed some of these aspects, but many questions remain open, especially for transition activities. This was exemplified in our findings for the Czech heating sector, which realistically can only switch to natural gas in the short to medium term, until energy efficiency and renewable energy technologies can be scaled up.

There is a need to introduce systematic tracking of climate finance for governmental budgets at all levels, including for federal, regional and local government budgets, as well as for climate programmes by public banks and agencies. In all countries, data needed for an analysis of energy and climate financing in the public sector were mostly available but tend to lack systematic tracking. This could be implemented by introducing tagging and/or evaluation procedures.

We also identified a need to introduce private sector surveys or to evaluate and streamline existing ones. In all countries, we see a large share of private investment. The respective data are more difficult or even impossible to obtain, as private companies and commercial financial institutions lack reporting. This results in an underestimate of the total investment and an insufficient understanding of the structure of the private flows.

There is a need to better understand how to compare the current investment with investment needs. The investment needs assessments assume an optimal technology mix, a selection of the lowest technology cost, and a strictly incremental share of investment. In the real world, investments do not reflect these assumptions. Furthermore, the incrementality is understood by financing institutions, private investors and the public sector. The incrementality and/or additionality reflected in the EU Taxonomy also differs from what is usually calculated in an investment needs assessment, including the models used by the European Commission. Therefore, the gap between the investment need and current investment may be larger than is shown in current figures.

[1] The brief presents selected results of research conducted by these organisations and partners, with a focus on recent investment in the energy transition and climate actions in these countries. For more information and details, please see the project webpage and dedicated reports at https://www.ikem.de/en/portfolio/cic2030/.

[2] For more information and references, please see the following background reports:
Novikova, A., Stelmakh, K., Klinge, A., Stamo I. 2019. Climate and energy investment map of Germany. Status report 2016. Berlin: Institute for Climate Protection, Energy and Mobility (IKEM).
Juergens, I., Piantieri, C., Hessenius, M., Rusnok, D., Berendsen, S. 2019. How to assess investment needs and gaps in relation to national climate and energy policy targets: a manual - and a case study for Germany. Berlin: Climate&Company.

[3] For more information and references, please see the following background reports:
Valentová, M., Knápek, J. and A. Novikova. 2019. 'Climate and Energy Investment Map – Czechia. Status Report 2017: Buildings and Renewable Energy Supply and Infrastructure'. Prague: Czech Technical University in Prague (ČVUT).
Valentová, M., Knápek, J., Mikeska, M., Vašíček, J. 2020. Investiční potřeba pro naplnění klimaticko-energetických cílů k roku 2030 v ČR. Budovy a obnovitelé zdroje energie [Investment needs for meeting the 2030 climate and energy targets in the Czech Republic. Buildings and renewable energy sources.]. České vysoké učení technické v Praze (ČVUT).
Valentová, M., Dunovski, D., Knápek, J. 2021. Capital raising strategy for Czechia: buildings and renewable energy supply. Prague: Czech Technical University in Prague (ČVUT).
Knápek, J., Valentová, M., Krejcar, R., Vašíček, J., Vecka, J. 2021. Klimaticko-energetické investice v teplárenství 2014–2030 (Climate and energy investments in the heating sector 2014-2030). ČVUT v Praze.

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