

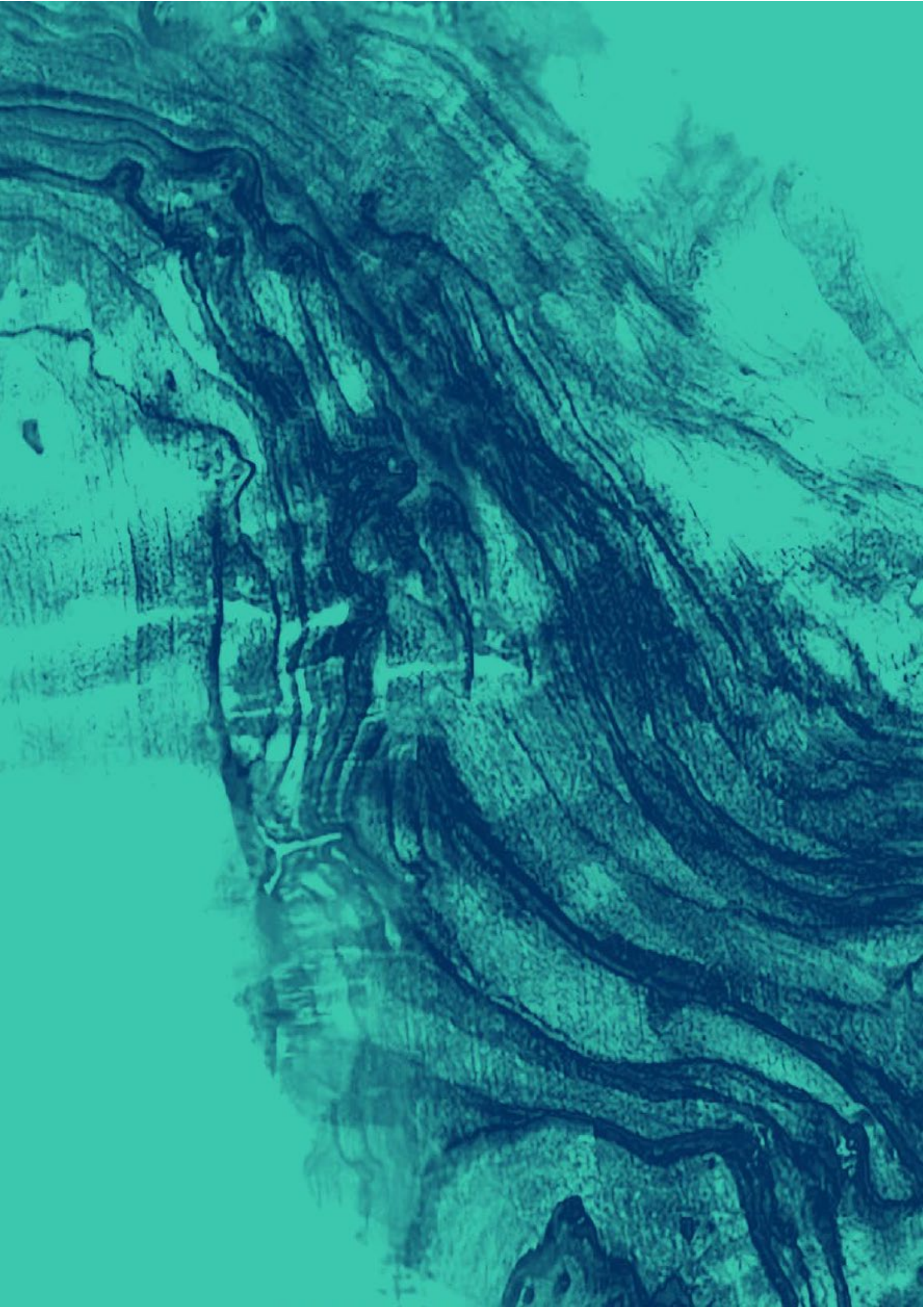
Report Summary

Sectoral Challenges and Opportunities in Financing the Ecological Transition The Case of Building Decarbonisation

May 2024



**INSTITUT
DE LA FINANCE
DURABLE**
PARIS EUROPLACE



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1. BACKGROUND

Published in May 2023, the [“Action Plan for Financing the Ecological Transition”](#) of the Sustainable Finance Institute (Institut de la Finance Durable – IFD) observed that the main obstacle to the emergence of ecological transition projects was not the lack of financial resources but the low economic profitability of investment projects.

At the request of French Minister Bruno Le Maire, the IFD is continuing its work, this time on a sectoral basis, to identify the challenges and opportunities in financing the ecological transition in France. This initial study aims to assess the financing of carbon reduction in building renovations to identify obstacles and provide recommendations to overcome them.

The building sector is one of the main emitters of greenhouse gases (GHGs). The carbon footprint of buildings over their life cycle was 153 MtCO₂eq in 2019¹, accounting for nearly 25% of the total carbon footprint of the French population. Two-thirds (103 MtCO₂eq.) are related to the use of buildings, mainly energy consumption for heating, and one-third (50 MtCO₂eq.) is related to new construction and renovation work (extraction, manufacturing, transport, etc.). The distribution of these emissions between residential and tertiary sectors is roughly two-thirds to one-third².

To reduce the sector’s carbon footprint, it is essential to reduce energy-related carbon emissions by reducing energy consumption (by lowering user needs and improving the building’s insulation quality), using low-carbon energy sources, and decarbonising the entire building life cycle from construction (emissions associated with the works and materials used) to the end-of-life stages (reuse, recycling, and renovation). This also contributes to reducing land sealing. Regarding direct emissions, the French General Secretariat for Ecological Planning (Secrétariat Général à la planification écologique – SGPE) sets a target of -61% of GHG emissions between 2019 and 2030³: changing energy sources should account for 61% of the total effort (eliminating 75% of oil boilers and 20% of gas boilers, replaced in particular by heat pumps and urban heating networks), while insulation should account for 27% of the effort, with 6% for energy efficiency and 6% for biogas.

To achieve climate targets, investments in the decarbonisation of the building sector must at least double compared to current levels. In 2022, €22 billion were invested in the energy renovation of buildings in France according to the Institute For Climate Economics (I4CE)⁴, including €16.4 billion in housing and €5.7 billion in the tertiary sector. To meet climate targets, an additional €20 to €30 billion per year will need to be added to the current level (or even €40 billion in an ambitious scenario for the complete elimination of thermal inefficiency by 2030). I4CE estimates that investments in housing need to double, while those in the tertiary

¹ Source: Centre Scientifique et Technique du Bâtiment, 2019

² During the life cycle of a building, emissions related to construction work can represent up to 60% to 70% of total emissions (Source: Association BBCE).

³ [SGPE. *Mieux se loger*. version of June 2023.](#)

⁴ [2023 edition of Panorama des financements climat, I4CE, 15 December 2023](#)

sector need to triple.

In addition to the quantitative aspect, on the qualitative front, there needs to be proportionally more investment in comprehensive renovations: the objectives can only be achieved if the renovations are effective, involving a deep change in energy systems towards decarbonised sources as defined by the French Climate and Resilience Act, to reach category A or B in the Energy Performance Certificate (EPC). For housing alone, the SGPE⁵ sets a target of 900,000 comprehensive renovations per year by 2030, a level well above the number of renovations financed by MaPrimeRénov' in 2022, which was around 66,000 (670,000 in total including partial renovations).

An essential prerequisite for the successful ecological transformation of the sector is the renovation capacity of the building sector. Thus, the French government, in good coordination with the industry and local authorities, is responsible for setting clear objectives for the sector, particularly in terms of training craftsmen, making the profession attractive, and developing low-carbon material supply chains to meet the growing demand. However, these issues will not be addressed in this study, which focuses on financial aspects.

In order to better understand the micro-economic issues involved in the financing of renovations, this assessment focused on three types of project initiators: households, local authorities and private tertiary sector players.

⁵ SGPE, *Mieux Agir*, July 2023

2. ASSESSMENT

GENERAL FINDINGS

1. EXCESSIVE BUREAUCRACY AND TECHNICAL REQUIREMENTS DISCOURAGE PROJECT INITIATORS

First and foremost, the technical execution of the work is an obstacle in itself: it requires significant involvement from the project initiator to coordinate a large number of stakeholders. Projects are this abandoned at a high rate.

At the same time, the administrative process is highly complex for all project initiators covered by this analysis. While there are numerous assistance mechanisms, particularly for households (one-stop shop, subsidies, craftsmen certification, etc.), they remain insufficiently known and underutilised due to the complexity and fragmented nature of the procedures. Nevertheless, it is important to acknowledge the efforts made to simplify these processes, especially for households, in the 2024 Finance Bill (PLF 2024).

2. ENERGY RENOVATION PROJECTS ARE NOT PROFITABLE ENOUGH

Regardless of the project initiator (household, local authority, private tertiary sector), the financial profitability of an energy renovation project is not guaranteed, as the time for a return on investment often exceeds the lifetime of the installation. In addition, there are maintenance costs (in particular for boilers) to consider in addition to the initial costs, and they generally occur before the investment can be made profitable. This leads to a negative trade-off with other projects that are more profitable or have more value. Finally, depending on the sector and the type of property, cost of the works, while significant, only has a limited impact on the valuation of the property when it is resold on the market.

3. CONDITIONS FOR ACCESS TO FINANCING TOOLS ARE NOT MET

Today, project initiators draw first on their own resources, and then on financial aids when they know about them. Debt may also be a source of funding when the initiators so desire.

We note that existing financing tools remain underutilised because conditions for access thereto are often not met. Thus, to carry out a project successfully, the cash advances required may be too large relative to the project initiators' capacity. In addition, the time to achieve a return on investment is generally perceived as too long and/or uncertain in relation to the project leader's time horizon. Finally, conditions for access to lending are sometimes too rigid, particularly for local authorities and co-owned properties, to enable projects to be carried out.

CASE 1 - HOUSEHOLDS

The financing of energy renovation is largely based on own resources and conventional loans (consumer and real estate). In 2022, subsidies accounted for 26% of investments in energy renovation of private homes according to I4CE. Out of the €15 billion invested in 2022 by households, the SGPE⁶ estimates that MaPrimeRénov covered around €3 billion and energy saving certificates €2 billion, leaving €10 billion to be covered by other means (self-financing, bank loans, eco-PTZ (0% Eco Loan), etc.) The system of subsidies in place makes it possible to significantly improve the economic equation for households, but, as things stand, this aid does not allow for energy renovations, particularly comprehensive renovations, at a mass scale. In 2024, however, we should note a clear improvement in the targeting of aid for low-income households, although still leaving a co-payment that may be too high for those in the low-income bracket.

The amount of cash required and the remaining costs limit the ability of households, particularly the ones receiving the most modest incomes, to commit to substantial renovation projects. In 2022, approximately 82,000 0% Eco Loan were granted (out of the 670,000 energy renovation projects identified by the ANAH (French housing administration) – i.e. 12.3% of projects), which shows relatively low use of the scheme, even though households prefer to use their own funds first. However, there has been strong growth in recent years: the number of 0% Eco Loans granted increased by 35% in 2022 compared with 2021 and could reach more than 110,000 0% Eco Loans by 2023 according to the latest estimates. This reflects how this product has become more attractive as interest rates have increased.

While co-owned properties represent more than one in four homes in France, the overall renovation of co-owned properties remains marginal, mainly due to two obstacles: collective decision-making is complex and putting together an adequate financing plan for co-owned properties is difficult. The ANAH counted 75 co-ownership 0% Eco Loan projects accepted in 2022 for a total of 501 projects since the creation of the scheme in 2015, figures to be compared with the 563,000 co-owned properties registered in the French national co-ownership register⁷. As it stands, putting together a financing plan is very complex because it must take into account the specific financial capacities of each co-owner. While banks are able to distribute loans to co-owners' associations for the renovation of common areas, it is sometimes difficult to meet all the conditions for the loan to be viable. To simplify the procedures, work is underway to link the MaPrimeRenov' for co-owned properties with the 0% Eco Loan for co-owned properties. With regard to collective decision-making, it has recently been possible to simplify the co-ownership vote on the subject, by favouring a simple majority (i.e. the majority of the voters present or represented at the general meeting) instead of an absolute majority, to authorise energy renovation works. The aim is to study the effects of this measure in the coming years.

⁶ [SGPE. *Mieux se loger*. version of June 2023](#)

⁷ It should be noted that the statistic is largely imperfect because it does not take into account other projects financed by other loans (collective or individual) such as the collective co-ownership loan. In these projects too, co-owners use their savings and/or consumer loans in addition to or instead of possible collective co-ownership loans, the development of which must be encouraged in terms of number and players involved.

Lastly, it should be noted that for all households (whether co-owned or not), support is a key factor in initiating projects and carrying out ambitious energy efficiency renovation work. The reforms aimed at “France Rénov” and “Mon Accompagnateur Renov” will also be tools to be appreciated tomorrow.

CASE 2 – LOCAL AUTHORITIES

Many local authorities do not have sufficient financial and human resources to structure and carry out energy renovation projects. Although the financial situation of local authorities remains healthy overall, local authorities have historically been cautious with regard to debt: borrowing could in particular be encouraged to finance investments in favour of the ecological transition.

However, varying capacities in terms knowledge and wealth management can be observed between small local communities and more organised communities such as *régions*.

In addition, the available allocations are granted in an uncertain manner (DSIL, DETR, Green Fund, etc.). Lastly, there is little use of banking systems given the reluctance of local authorities to take on debt.

CASE 3 – PRIVATE TERTIARY SECTOR

The system of aides available to the private tertiary sector is fragmented and very small. Private tertiary sector players therefore mainly have their own funds and their debt capacity for energy renovation projects to which they are bound by the decree governing renovations for tertiary-use buildings.

Profitability is a major factor, as is the potential customer impact of this type of investment. The reporting constraints being put in place over the coming years could play a role in raising awareness and taking action.

3. RECOMMENDATIONS

Reducing the building's carbon footprint must be the sole guiding principle of sectoral policies: this is mainly a matter of massively reducing the building's energy consumption while decarbonising the energy sources. The cost of reducing carbon emissions must remain at the heart of the priorities for sectoral public policy strategies. The cost of reducing carbon emissions must remain at the heart of the priorities for sectoral public policy strategies. The sector has the resources to carry out these transformations, but it is a question of giving itself the means to do so.

The recommendations are broken down by type of project owner (households, local authorities and tertiary players) when necessary to best specify the levers adapted to each.

I. STABILISE THE ADMINISTRATIVE FRAMEWORK, IMPROVE COMMUNICATION AND PROVIDE BETTER SUPPORT FOR PROJECT INITIATORS

First of all, the public authorities must set a regulatory environment that is ambitious, clear and stable. Therefore, as energy renovation works are technically complex projects, it is a question of providing the best possible support to project initiators in these processes.

Proposal 1: Reinforce the one-stop-shop principle for private individuals, in particular by making procedures more digital, and extend it to the tertiary sector. Since 2022, "France Rénov" and "Mon Accompagnateur Rénov" have made it easier for individuals to access information on aid systems and provide administrative support throughout the project.

Proposal 2: Encourage the use of low-carbon materials during building renovation work to also tackle the carbon footprint of renovation work. The RE2020 regulation, which aims to reduce the carbon footprint of construction (conserving the existing structures as much as possible, using low-carbon and bio-sourced materials, recovering and reusing removed materials, etc.), does not currently apply to renovation.

A. FOR HOUSEHOLDS

Proposal 3: Carry out large-scale communication campaigns to raise awareness of public aid schemes for financing renovation projects and to capitalise on all the benefits associated with these projects in addition to the gains on energy bills (improvement in comfort, increase in property values, reduction in energy poverty, adaptation to climate risks such as heat waves, etc.).

Proposal 4: Support co-ownership associations in increasing the skills of their teams in setting up energy renovation projects for co-owned properties. Property managers could play a key role not only in the technical implementation of projects but also in the design of the financing plan.

B. FOR LOCAL AUTHORITIES

In general, the aim is to ensure the professional management of public assets and the decarbonisation of these assets.

Proposal 5: Reinforce specialised technical support teams (at the central government or regional level) to support local authorities in managing high-performance renovation projects so as to pool expertise, benefit from economies of scale and receive all available subsidies⁸.

Proposal 6: Develop interministerial public real estate companies to manage the French government's real estate portfolio. With a view to decarbonising the portfolio, the aim is to optimise the use of buildings and their operational management, and to possibly sell assets, the governance of which is now split between the ministries. This development will be able to draw on the experiments of the French government's Real Estate Department, which is currently developing such structures in two regions.

⁸ Local authorities are already starting to pool human resources within structures such as semi-public companies, local energy and climate agencies (ALEC) and energy unions. In addition, it may be appropriate to rely on the evaluation of the school renovation plan to be rolled out in 2024.

C. FOR THE PRIVATE TERTIARY SECTOR

Proposal 7: Provide owners with data on the actual consumption of buildings from suppliers and tenants, for a better financial valuation of efficient real estate. Today, building occupants must enter this information on the OPERAT platform, without the owners having access to it. However, this indicator is important in the financial valuation of the asset. Furthermore, the development of energy consumption benchmarks according to the type of building would facilitate the assessment of the performance of private tertiary sector players.

Proposal 8: Extend the obligation to produce a Energy performance Certificate to all tertiary-use buildings, based on the housing model but more carbon-focused, for a better financial valuation of high-performance real estate. The EPC for the tertiary sector is now mandatory for buildings of more than 250m² for new buildings and at the time of sale.

II. IMPROVE THE ECONOMIC PROFITABILITY OF EFFICIENT RENOVATION PROJECTS FOR PROJECT INITIATORS

The next step is to create the conditions for a market that is sustainable and to find the necessary new economic balances. Two of the key issues in investment arbitrage are profitability and risk: it is a question of playing on both factors to improve the economic equation.

Proposal 9: To further integrate, on the financing side, the impact of lower energy bills in assessing the solvency of renovation project initiators, this impact being all the more significant in a context of higher interest rates and energy prices. A condition for the success of this measure remains a guaranteed reduction in energy consumption associated with the works.

A. FOR HOUSEHOLDS

In a constant regulatory environment⁹, ensuring a level of economic profitability of carbon renovation works that enables the objectives set to be achieved requires a massive amount of public aid. This may involve a very substantial reinforcement of mechanisms that are already in place, such as MaPrimeRénov'. In order to smooth the government's budgetary effort over time, it could be considered as an alternative to use tax deductibility on the depreciation of the work carried out (see proposal 10a).

⁹ Standards or taxes could also substantially accelerate investment, but these solutions do not appear to be the preferable option at this stage.

Proposal 10: Substantially increase the subsidy for renovation work via schemes such as MaPrimeRénov's, in particular to achieve a near-zero co-payment for the lowest-income households. In addition, it will be necessary to provide for better targeting of aid towards actions with the best reduction costs.

Proposal 10B: Alternatively, allow the tax deductibility of the depreciation of household investments in carbon renovation. Thus, over the depreciation period of the investment (for example 10 years), the household benefits from a tax deduction on the amount of the annual depreciation. For the poorest households that do not pay income tax, the aid could remain in the form of a subsidy. The progressive nature of MaPrimeRénov's could also be applied to this system for better targeting. The clarity for households in terms of financial interest, as well as easier administrative procedures (an additional line to be completed in the tax return), would be likely to maximise the use of this system.

Proposal 11: Strengthen the zero-interest eco-loan (éco-PTZ) for the efficient renovation of housing, allowing it to finance 100% of the investment effort or to be extended to investments in the production of energy used in residential buildings (solar panels, geothermal energy, wind turbines, etc.).

B. FOR LOCAL AUTHORITIES

Proposal 12: Study the relevance of a support mechanism for financing loans granted to local authorities for the thermal renovation of buildings in order to reduce their financing cost.

C. FOR THE PRIVATE TERTIARY SECTOR

Proposal 13: Accelerate the depreciation of investments dedicated to renovation to accelerate the deployment of projects.

Proposal 14: Allow the non-occupying owner of tertiary-use buildings to pass on the cost of renovation works in the cost of rent to share the benefit of energy savings as is the case for residential buildings (the "3rd line of receipt" used by social landlords). The aim is to amend the legislation so that this exception is exempt from the rules limiting rent increases.

Proposal 15: Extend the recovery of the installation of a "BMS" (building management system: computerised system optimising energy consumption) via the energy saving certificate mechanism, and extend to the replacement of boilers by heat pumps, heat recovery cold unit installations and the modernisation of lighting systems.

III. CREATE THE CONDITIONS FOR PROJECT INITIATORS TO ACCESS FINANCING TOOLS

Finally, the aim is to provide project initiators with financial resources adapted to their respective needs and issues. The schemes must free project owners from having to put up cash advances and from the time horizon of economic profitability. Lastly, the aim is to make it easier for players, particularly co-owned properties and local authorities, to access debt. Third-party financing solutions may partially meet these challenges, but this is a very recent solution that needs to be refined and the most relevant use cases have yet to be identified.

Proposal 16: Explore the use of third-party financing¹⁰ for households (more specifically for co-owned properties), local authorities and businesses. Third-party financing can be an interesting innovative solution to be assessed so that project initiators are supported both in the financing and in the technical implementation of the project.

→ For co-owned properties, trials have been carried out by the financing companies but the projects are not conclusive at this stage. The economic model is not yet mature, but it remains to be explored.

→ For local authorities and the central government, third-party financing was authorised by the mechanisms provided for by the law of March 2023¹¹. Its aim is to smooth the financial effort of local authorities over time, but its real usefulness and feasibility remain to be assessed given the complexity of the project set-up. The French government is still looking for a pilot project to test the relevance of the use case.

→ For companies, the third-party financing model seems more promising at this stage due to, among other things, an attractive average project size for financiers and greater simplicity in the contacts involved in projects. Furthermore, the benefits of transforming an investment (capex) into an operating expense (opex) – enabled

¹⁰ The Alur Act defines the concept of third-party financing (Art. 124). The principle is that the third-party financing company advances the renovation costs and then is paid on the energy savings achieved. It consists of: A technical work offer aimed at reducing the energy consumption of buildings. A service to finance this offer in return for compensation. This financing may be partial or total and will take the form of an overall fee (*Loi Alur et performance énergétique* – May 2014) which is regular and time-limited. Third-party financing thus consists of the signing of a long-term maintenance contract accompanied by work, which thus makes it possible to relieve the project leader of cash flow and financing problems. In addition, the third-party financier, providing project management, is responsible for the administrative and technical constraints. The third party and the beneficiary may be remunerated on the energy savings achieved, and may enter into an Energy Performance Contract (CPE), which commits the project owner to a guarantee of results in terms of energy performance.

¹¹ Law no. 2023-222 of 30 March 2023 aimed at opening up third-party financing to the government and its public establishments and to local authorities to encourage energy renovation work.

by third-party financing solutions – are more directly perceptible to companies. In order to promote access to third-party financing for more companies, the BPI guarantee scheme should be extended to energy renovation.

A. FOR HOUSEHOLDS

Renovating co-owned properties is a particularly difficult challenge to meet, with very few projects underway even as a quarter of households¹² live in co-owned properties. Specific considerations are therefore needed. In addition, it is also a question of simplifying the distribution of 0% Eco Loans.

Proposal 17: Facilitate the conditions for taking out a loan through co-ownership¹³, in particular by creating a public guarantee fund covering 80% of the loans granted in the event of non-payment by certain co-owners of the debt charges. To maximise its effectiveness, work should be done on the technical arrangements for triggering the guarantee¹⁴. This fund would replace the guarantee requested by the banks from co-owned properties, one of the main obstacles to the finalisation of these loans today. In addition:

- Study the feasibility of a public advance mechanism for vulnerable co-owners.
- Couple the 0% Eco Loan for co-owned properties with the MaPrimeRénov' for co-owned properties (currently under development).
- Create the possibility of having several repayment periods at the choice of the co-owners to adjust to the profile of each.
- Allow banks to access the national co-ownership register to facilitate customer knowledge

Proposal 18: Continue to simplify the distribution of 0% Eco Loan by banks. Recently, households entitled to MaPrimeRénov' are automatically eligible for an 0% Eco Loan (subject to solvency conditions): this is a step in the right direction to reduce the burden on customers and the burden on banks of technical verification constraints.

- Postpone the date used to calculate the amount of the tax credit allocated to the banks (in 0% Eco Loan for co-owned properties) as close as possible to the implementation of the loan (date of sending of the final contract and not the date of sending of the draft loan contract) to adjust it as closely as possible to the market price.

¹² [Les cahiers de l'Anah, special issue no. 4 – Special issue on renovation in co-owned properties, September 2023](#)

¹³ The Bill “on speeding up and simplifying the renovation of degraded housing and major development projects”, currently under discussion in Parliament, aims in particular to make it more flexible to take out a loan for a co-owned property.

¹⁴ Guarantees for final losses may not be sufficient.

B. FOR LOCAL AUTHORITIES

For local authorities, the challenge is to unleash their investment capacity. The government must give local authorities more flexibility in their use of debt. A first strong signal from the government in favor of the debt of local authorities could already be a major step forward.

Proposal 19: Enable the accounting depreciation of local authorities' investments in the ecological transition. This will give local authorities more flexibility to take on debt.

To finance the ecological transition, local authorities are forced to borrow if they do not want to increase local taxes and if the government does not want to increase its transfers. But they are currently limited in their debt capacity by the budgeting of investments. In the public accounts, investments are recorded in the year of their expenditure even as they benefit the community for several years. Private accounting provides for the depreciation of investments, which is not the case in public accounting. Local authorities, for fear of significantly deteriorating their balance sheets, are therefore more reluctant to make major investments. The aim is to enable them to depreciate them in their accounts in order to free up their debt capacity in the case of the ecological transition.

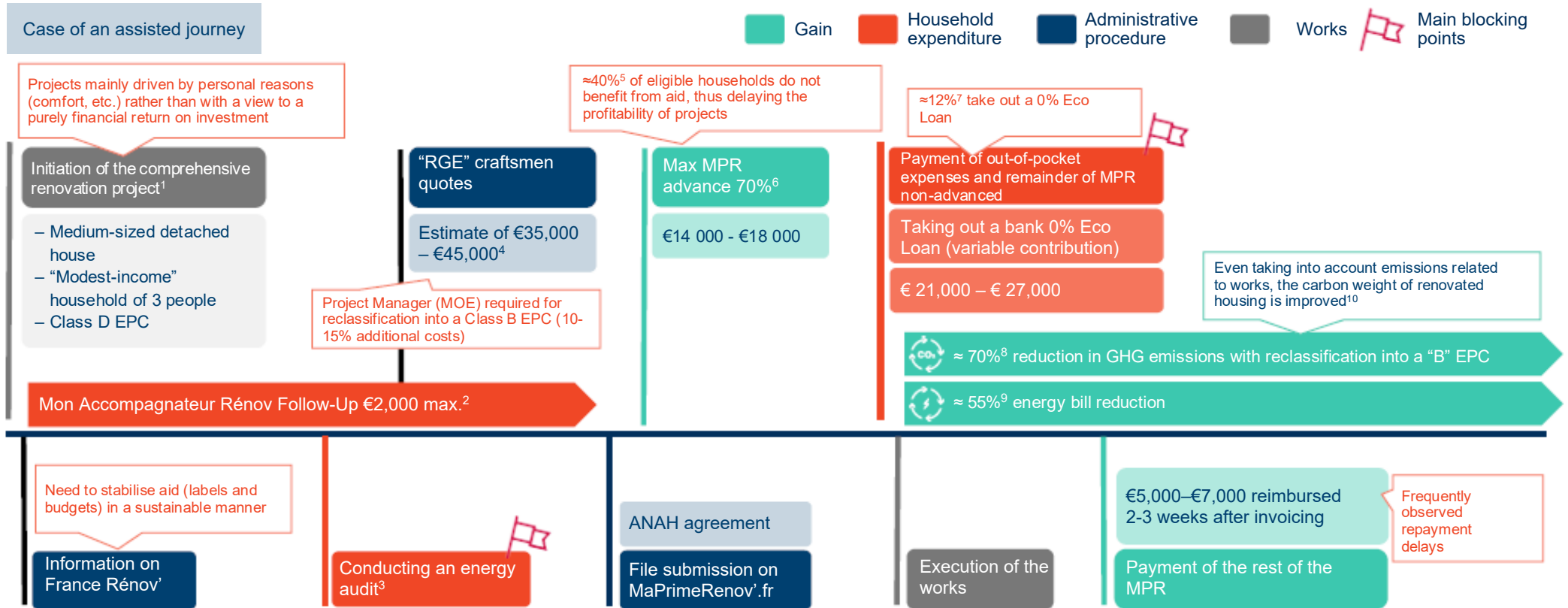
Proposal 20: Valuing the “healthy” debt of local authorities. The 2024 Finance Act provides that local authorities can show a “statement of financial commitments contributing to the ecological transition”, i.e. an opportunity to isolate what falls under the “green debt” of local authorities, so as to improve the readability of actions in favour of the ecological transition at the local level. This possibility, the implementation of which will be specified by decree, should enable local authorities to free them from their constraints concerning investment in the ecological transition.

C. FOR THE PRIVATE TERTIARY SECTOR

Proposal 21: Extend the BPIFrance (French Public Investment Banque) guarantee system to energy renovation. This measure would allow a larger number of companies to benefit from the financing tools available by guaranteeing the lender repayment (for example 80%) of the loan, even in the event of non-payment by companies. This would reduce the cost of financing. The terms of the guarantee should be worked on to maximise its effectiveness.

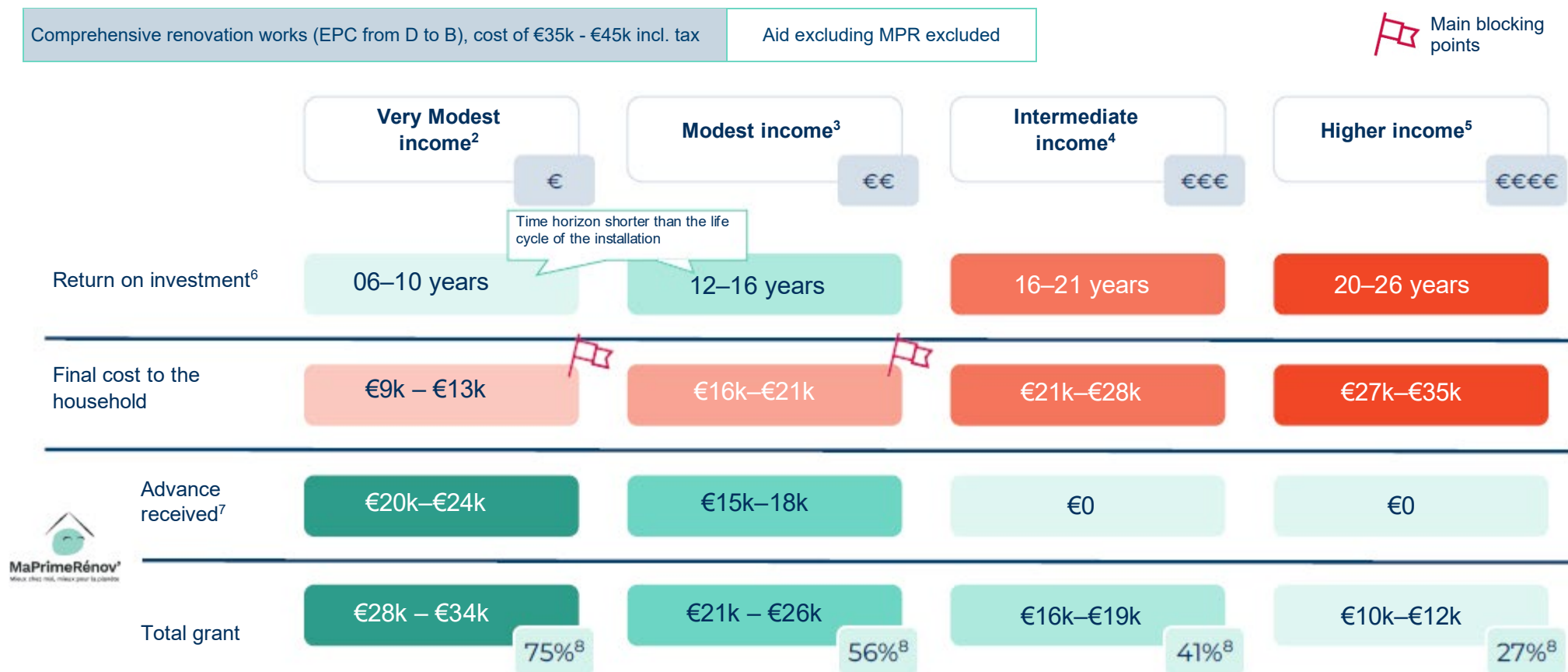
THE JOURNEY OF PROJECT INITIATORS IN THE ENERGY RENOVATION OF THEIR BUILDINGS

CASE STUDY NO. 1.A.: ENERGY RENOVATION OF INDIVIDUAL RESIDENTIAL HOUSING BY A HOUSEHOLD (RESIDENTIAL)



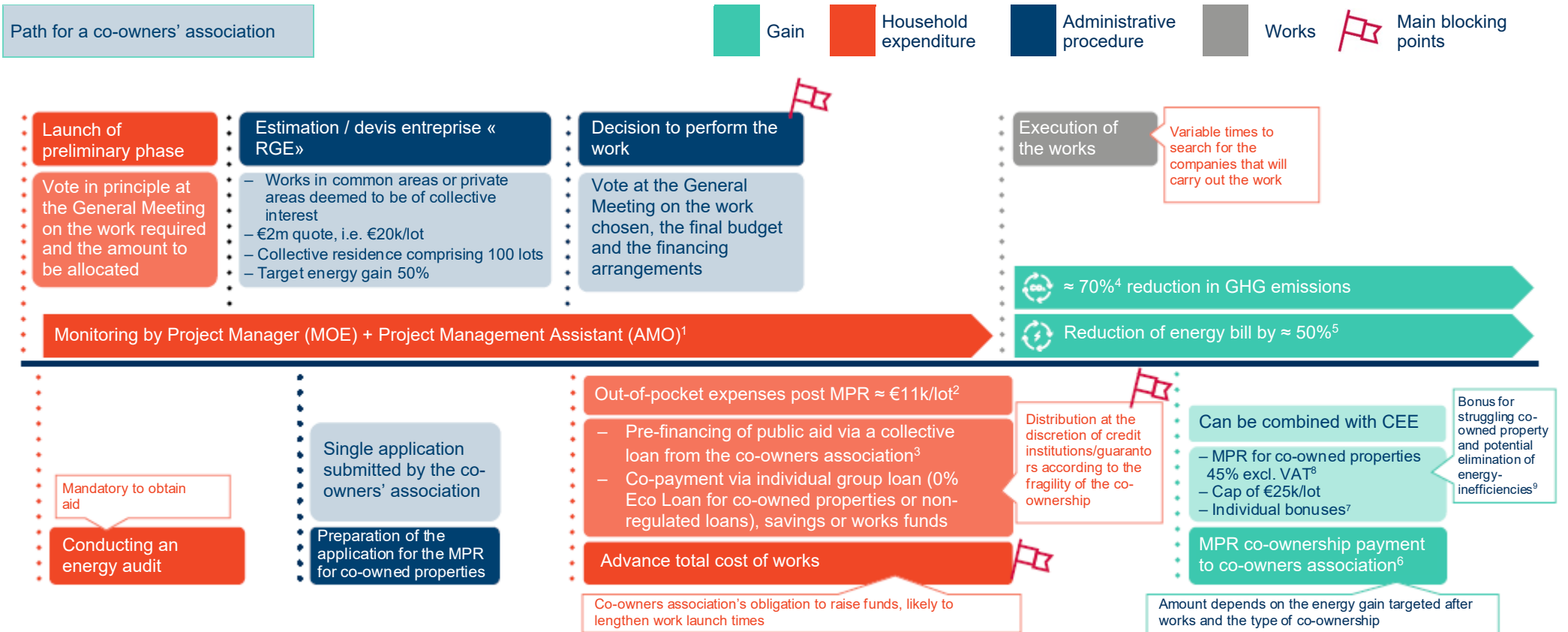
1. Detached house of 91 m² outside Île-de-France for a household of 3 people with median income 2021 / 2. Payment of 80% of the service, covers part or all of the cost of the energy audit, or taking out a contract with a Financing Company / 3. MAR carries out or subcontracts the performance of the energy audit / 4. Effy data for comprehensive renovation including two insulation actions, one heating action and one ventilation action / 5. *Etude sur le financement des travaux de rénovation énergétique*, IFOP FBF ASF, 2023 / 6. Maximum MPR advance cap for modest-income household since MPR 2024, MPR at 60% (excl. tax) of the cost of the works according to the France Rénov MPR 2024/7 guide scales. *Bilan statistique des Eco PTZ émis en 2022*, SGFGAS and Anah Report 2022/8. Average reduction calculated in kg eqCO₂/m²/year between the EPC D and B classes and consistent with the performance of 4 actions on 3 renovation stations for a surface area of 91 m² according to the *TREMI 2020*, ONRE, 2022/9 survey. Average decrease in energy consumption (variable according to household habits) to switch from a D to B EPC and obtain Ma Prime Rénov’ / 10. *Poids carbone des logements*, OJD, 2021

FOCUS ON CASE STUDY 1.A.: 2024 MAPRIMERENOV AMOUNTS BY HOUSEHOLD INCOME TYPE



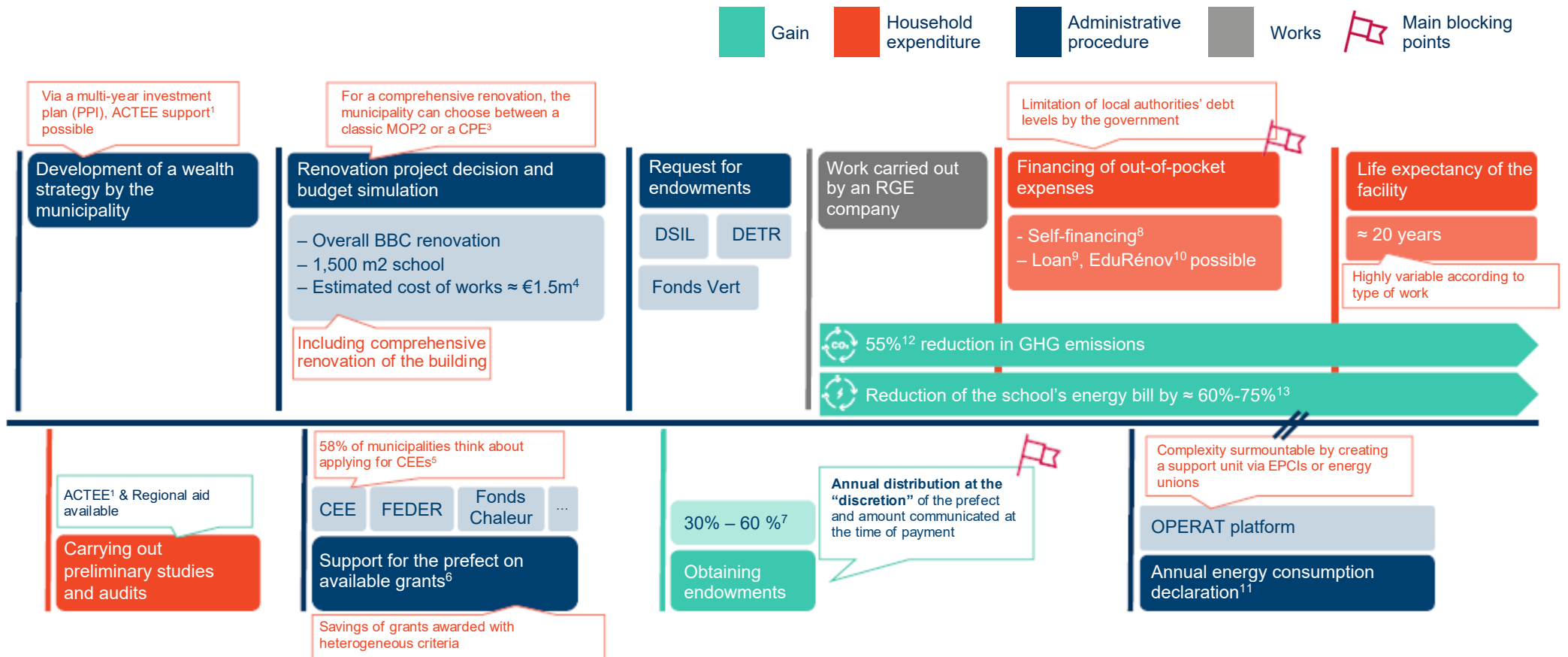
1. Calculation of aid and advances for comprehensive renovation works (EPC class D to B, cost of €35k – €45k incl. VAT) for a household of 4 people living in individual accommodation of 91 m² outside the Ile-de-France region according to the MPR 2024/2 scales. Annual tax income between €0 and €29,917 for a household of 3 people / 3. Annual tax income between €29,917 and €38,349 for a household of 3 people / 4. Annual tax income between €38,349 and €54,071 for a household of 3 people / 5. Annual tax income greater than €54,071 / 6. Estimated reduction in the energy bill of 55% after works (initially €2,400/year for 91 m²) / 7. Advance of 70% of the amount of aid for very-modest- and modest-income households / 8. Share of the 2024 MPR grant in relation to the total cost of the works (€35k–€45k)

CASE STUDY NO. 1.B.: ENERGY RENOVATION OF A RESIDENTIAL BUILDING BY A CO-OWNERSHIP ASSOCIATION (RESIDENTIAL)



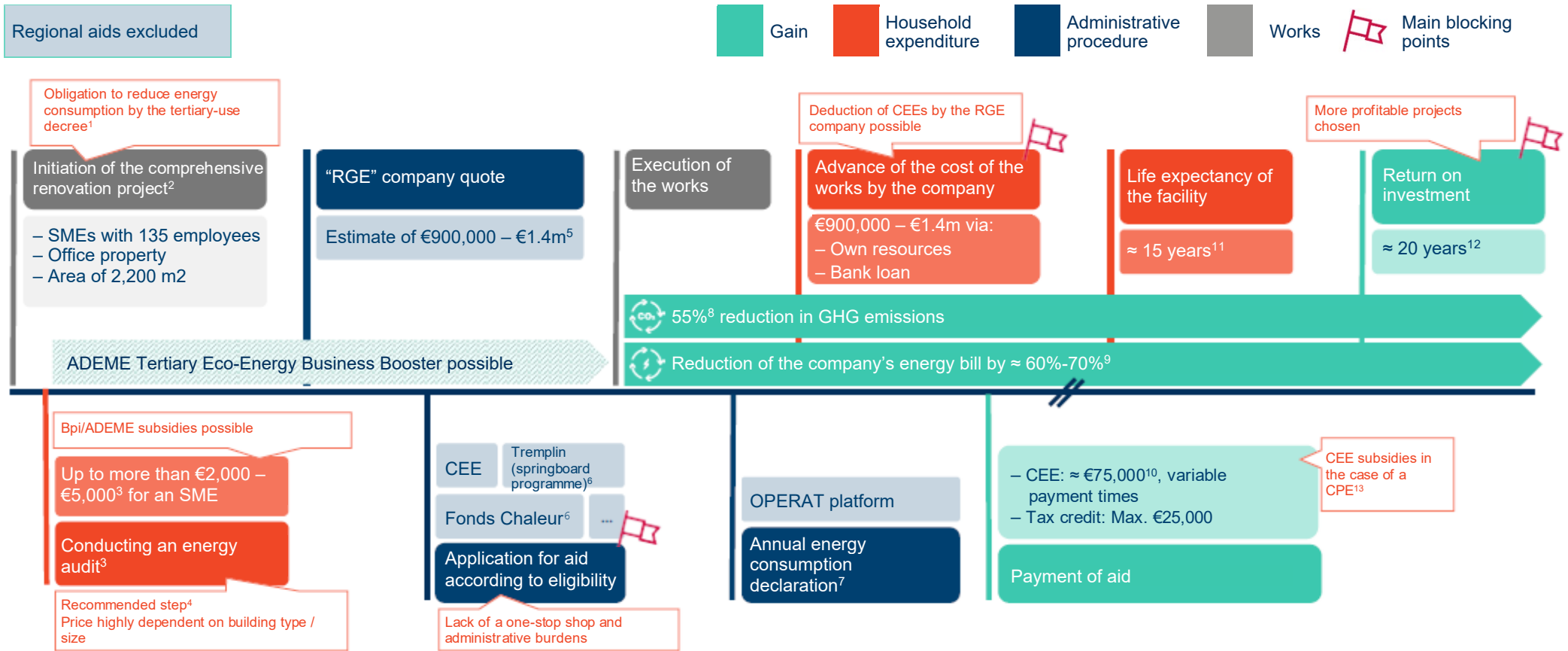
1. Project manager Mandatory for a project exceeding €100,000, project management assistant covered at 50% in MPR for co-owned properties with a cap of €300/lot (excl. tax) for co-owned properties of >20 lots / 2. Calculated according to the 2024 scales for MPR for co-owned properties: financing rate of 45% exd. tax for a target energy gain of 50% / 3. Collective loan also available to carry out the works but very little used because unanimity vote required / 4. Average reduction calculated in kg eqCO₂/m²/year between the EPC D and B classes and consistent with the completion of 4 actions on 3 renovation stations, ONRE, 2022/5. Reduction target to obtain MPR for co-owned properties / 6. The total amount of MPR + CEE must not exceed 80% of the amount including tax of the works / 7. €3,000 for very low-income households, €1,500 for low-income households / 8. MPR Copro (co-ownership) financing rate for energy savings of at least 50%, with an advance for co-owned properties in difficulty, capped at €900k / 9. Bonus of 10% for elimination of thermal inefficiency and 20% for co-owned properties in difficulty including CEEs

CASE STUDY NO. 2: ENERGY RENOVATION OF A COLLECTIVE BUILDING BY A LOCAL AUTHORITY (LOCAL AUTHORITIES)



1. FNCCR programme for supporting and fostering energy renovations of public buildings for local authorities / 2. Public project management / 3. Energy performance contract, turnkey in nature and no decoupling between the design and execution of the works / 4. Cost of an overall BBC renovation of €1,000/m², AFL study, *Comment financer la rénovation énergétique des collectivités territoriales ?*, 2023 / 5. CEE: Energy suppliers and delegates, FEDER: regional councils, Fonds Chaleur: Ademe / 6. Data extracted from the CEREMA survey (sample of 200 local authorities, 70% of which are municipalities), *La gestion du patrimoine immobilier des collectivités territoriales*, 2021 / 7. 34% on average in 2022, I4CE study, La Banque postale, *La gestion du patrimoine immobilier des collectivités territoriales ?*, 2023 / 8. 40% on average in 2022, *Ibid.* / 9. 31% on average, *Ibid.* / 10. Banque des Territoires lending programme for to school buildings / 11. Mandatory for all buildings subject to the tertiary-use decree / 12. Target of the European Climate Law for 2030 compared to 1990/13. Estimate for a comprehensive renovation based on 6 energy renovation cases (-72% on average, highly variable depending on the initial state of the building) and goal of the tertiary-use decree for 2050 (-60%)

CASE STUDY NO. 3: ENERGY RENOVATION OF A COMMERCIAL BUILDING BY A PRIVATE COMPANY (PRIVATE TERTIARY SECTOR)



1. Reduction by 40% by 2030, 50% by 2040, and 60% by 2050 in the final energy consumption of tertiary-use buildings of more than 1000m² / 2. For an SME of 135 employees, recommendations of 11m² per employee / 3. Prices set freely by the design offices, Ademe data / 4. Mandatory every 4 years for companies with staff > 250 people and/or with annual turnover > €50m / 5. Estimate drawn up on a sample of office renovations (€532/m²), Ademe data / 6. ADEME help / 7. Mandatory for all buildings subject to the tertiary-use decree / 8. Target of the European Climate Law for 2030 compared to 1990/9. Estimate based on 6 cases of energy renovation (-72% on average, highly variable depending on the initial state of the building) and goal of the tertiary-use decree for 2050 (-60%) / 10. Capital Energy estimate for attic insulation, wall insulation, window insulation, air/air heat pump, BMS system, dual flow CMV / 11. Service life of a Building Management System (BMS) / 12. Average energy bill of the target company pre-works ≈ 80€/year / 13. Energy performance contract, very marginal for the private tertiary sector

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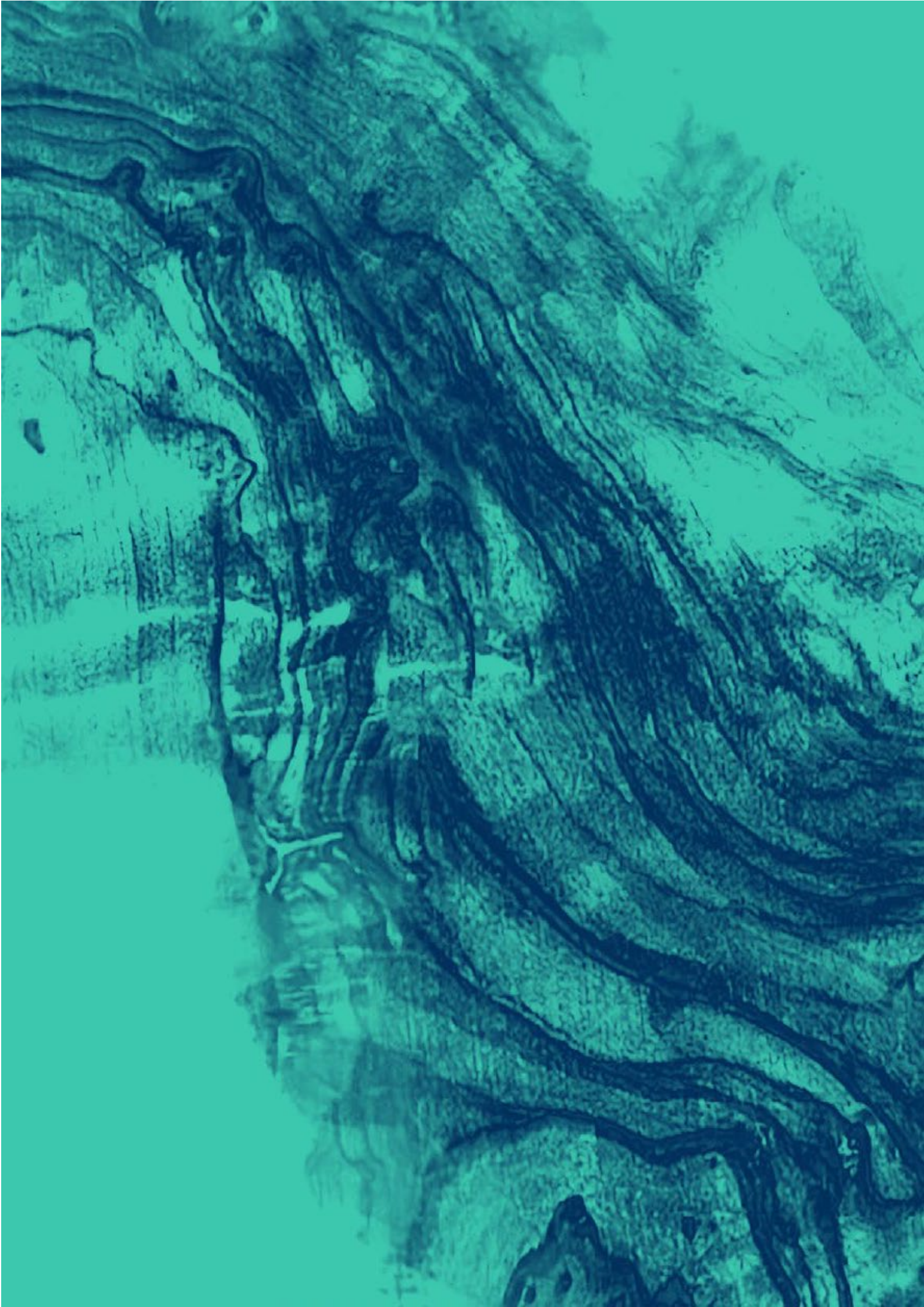
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