

# TRIPLE-A SURVEY ON THE CATEGORISATION OF RISK MITIGATION STRATEGIES, FINANCING INSTRUMENTS & SCHEMES

*Briefing Note No.12, May 2022*

## SUMMARY

The 12<sup>th</sup> Triple-A Briefing Note presents and analyses the results that emerged from the Triple-A stakeholder consultation on the categorisation of risk mitigation strategies, financing instruments and financial schemes for energy efficiency investments. The consultation took place from December 2021 until February 2022 and was based on a dedicated online questionnaire. Valuable results have emerged from the process, such as the importance of risk reduction through collateral, project aggregation, and proper project design to promote and mainstream energy efficiency measures throughout the case study countries, and the main financing instruments identified such as the green loans, the green bonds and the energy efficiency auctions.

## KEYWORDS

Energy Efficiency Investments; Energy Market; Risk Analysis; Structured Stakeholder Consultation; Questionnaire, Project Aggregation

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The Triple-A project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement no. 846569.

# 1 Introduction

Energy efficiency investments involve multiple uncertainty factors, with their evaluation presenting high complexity<sup>1</sup>. De-risking energy efficiency investments by applying the appropriate risk mitigation strategies, as well as finding suitable public or private instruments for their financing are critical considerations for their upscaling<sup>2</sup>. Within Triple-A Task 3.1: Triple-A Risks and Mitigation Strategies, dedicated reviews in the energy efficiency financing literature were conducted for the identification of the main risk mitigation strategies to reduce the different types of risks and the main instruments and schemes for financing energy efficiency investments<sup>3</sup>.

This Briefing Note analyses the results of the [Triple-A questionnaire on the categorisation of risk mitigation strategies, financing instruments and financial schemes](#). This questionnaire is part of the Triple-A stakeholder consultation process and was conducted as a primary step towards identifying appropriate risk mitigation strategies and applicable and important financing instruments and financial schemes for energy efficiency investments across Triple-A case study countries. The survey took place from December 2021 to February 2022 and in total, thirty-three (33) responses were received from energy efficiency experts representing financing bodies, companies, policy support

institutes, and academia. Due to the containment measures imposed to deal with the Covid-19 pandemic, the consultation process was implemented online, while the stakeholders were engaged mainly via e-mail and personal invitations.

# 2 Triple-A Questionnaire

The main objective of this online questionnaire is to categorise the financing instruments, financial schemes, and risk mitigation strategies identified through the literature review for the Triple-A case study countries based on the experience of related experts about their applicability and importance.

The main characteristics of the questionnaire are the following:

- Explorative, semi-quantitative online questionnaire.
- Different question formats, namely short answers, multiple choices, and checkboxes.
- Developed in Google Forms.

The main respondents' profiles include Financing Bodies (9.4%), Companies and Project Developers (46.9%), Policy Makers/ Policy Support Institutes (9.4%), Researchers and Academia (25.0%), and Other (9.4%).

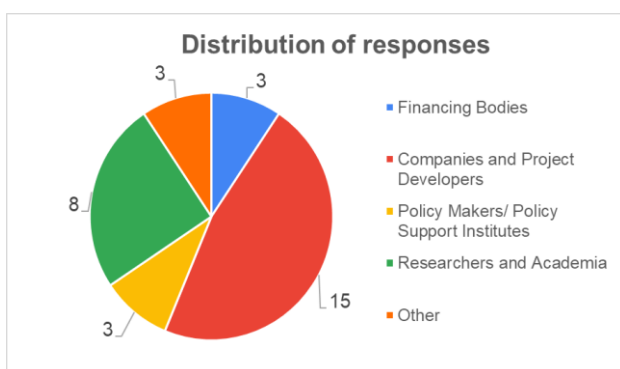


Figure 1: Distribution of responses per stakeholder profile

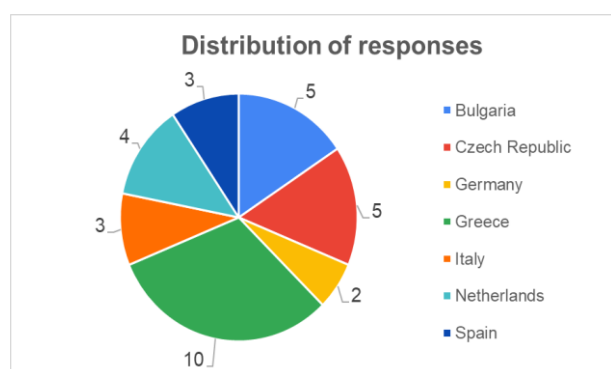


Figure 2: Distribution of responses per case study country

<sup>1</sup> Lee, P., Lam, P.T.I., Lee, W.L., Performance risks of lighting retrofit in energy performance contracting projects, *Energy Sustain. Dev.*, 45 (2018), pp. 219-229, <https://doi.org/10.1016/j.esd.2018.07.004>

<sup>2</sup> Koutsandreas, D., Kleanthis, N., Flamos, A., Karakosta, C., Doukas, H., Risks and mitigation strategies in energy

efficiency financing: A systematic literature review, *Energy Reports*, (2022), pp. 1789-1802, <https://doi.org/10.1016/j.egy.2022.01.006>

<sup>3</sup> Kleanthis, N., Koutsandreas, D., Exintaveloni, D.S., Karakosta, C., Ristau, P., Flamos, A., 2020. Triple-A Deliverable 3.2: Final Report on Risks of Energy Efficiency Financing and Mitigation Strategies Typology.

The “Other” category involves stakeholder profiles for which only one answer was provided, such as “Trader – Economist”, “Network of Local Authorities”, and “Real estate advisor”.

In addition, responses were provided by stakeholders from all Triple-A case study countries except for Lithuania, while the majority emerged from stakeholders from Greece, the Czech Republic, and Bulgaria, covering 62.5% of the total sample of answers. In addition, some replies were collected by stakeholders from other countries apart from the Triple-A case studies, such as Switzerland.

### 3 Results Analysis

#### 3.1 Risk mitigation strategies

The identified risk categories and the respective risk mitigation strategies that have been provided as options to the respondents emerged from the Triple-A’s *Final Report on Risks of Energy Efficiency Financing and Mitigation Strategies Typology*<sup>4</sup>. The

respondents had to select the i) applicable and the ii) most important Risk Mitigation Strategies for their country. The options given are presented briefly in the following sections. Also, the respondents could provide their own comments and add more options, if needed.

#### Financial risk

The Risk Mitigation Strategies options provided to respondents were:

- Careful study of the creditworthiness of the borrower and/or the ESCO during the negotiation stage
- Collaterals
- Project aggregation
- Loan guarantee mechanisms
- Increase of registered capital to develop multiple financing channels
- Grants and subsidies
- Off-balance sheet financing
- Investigation of possible unnecessary costs
- Charging borrowers with high interest rates

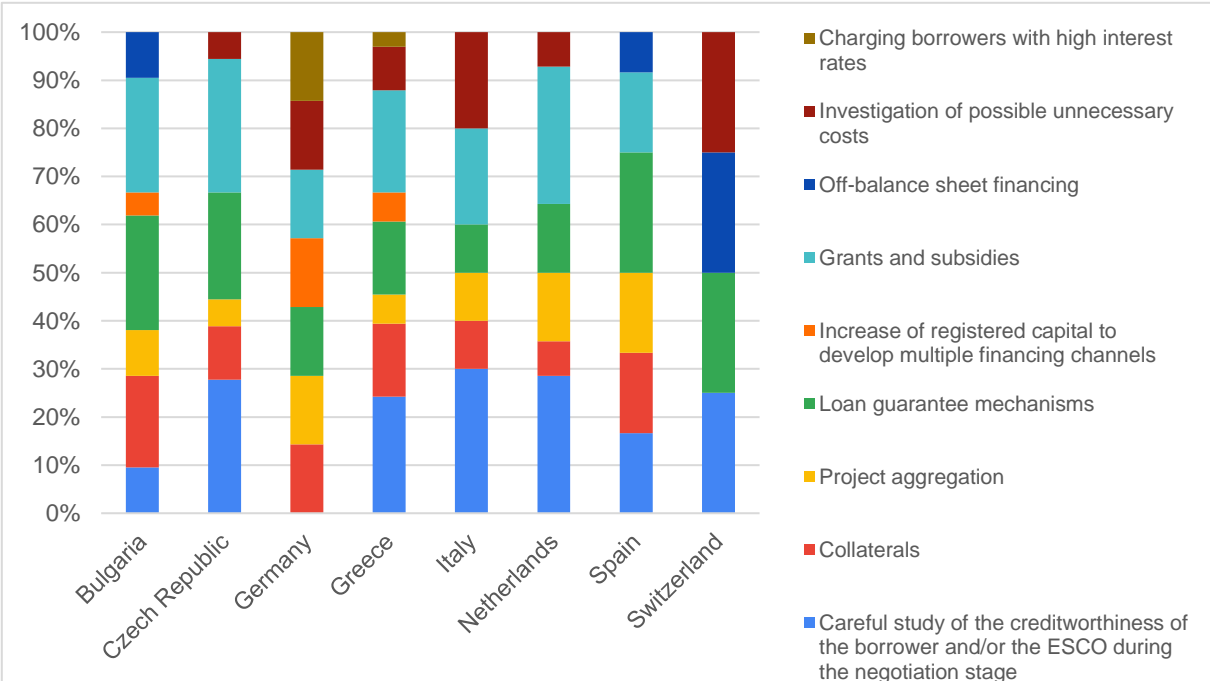


Figure 3: Appropriate financial risk mitigation strategies per case study country

<sup>4</sup> Available here: <https://aaa-h2020.eu/sites/default/files/reports/D3.2%20Final%20Rep>

[ort%20on%20Risks%20of%20EE%20Financing%20and%20Mitigation%20Strategies%20typology.pdf](https://aaa-h2020.eu/sites/default/files/reports/D3.2%20Final%20Rep)

The common financial risk mitigation strategies in all countries' responses are *grants and subsidies, loan guarantee mechanisms, collaterals, and project aggregation**Error! Reference source not found.*. Another risk mitigation strategy with significant shares in all case study countries except for Germany is *careful study of the creditworthiness of the borrower and/or the ESCO during the negotiation stage*, while the strategy suggesting *charging borrowers with high interest rates* is observed mainly in Germany and slightly in Greece.

**Behavioural risk**

The Risk Mitigation Strategies options provided to respondents are:

- Following sustainable lifestyles and consumer behaviour

- Consuming more efficiently, differently, and less
- Raising awareness
- Information provision
- Subsidies
- Energy price regulation
- Tradable permits

The behavioural risk mitigation strategies that can be observed in the responses for all countries are *subsidies and raising awareness, and consuming more efficiently, differently, and less**Error! Reference source not found.*. Both *information provision and following sustainable lifestyles and consumer behaviour*, hold significant shares in all countries but are absent from Germany and Spain, respectively. *Energy price regulation* is also considered a significant risk mitigation strategy in Germany, Greece, and Spain.

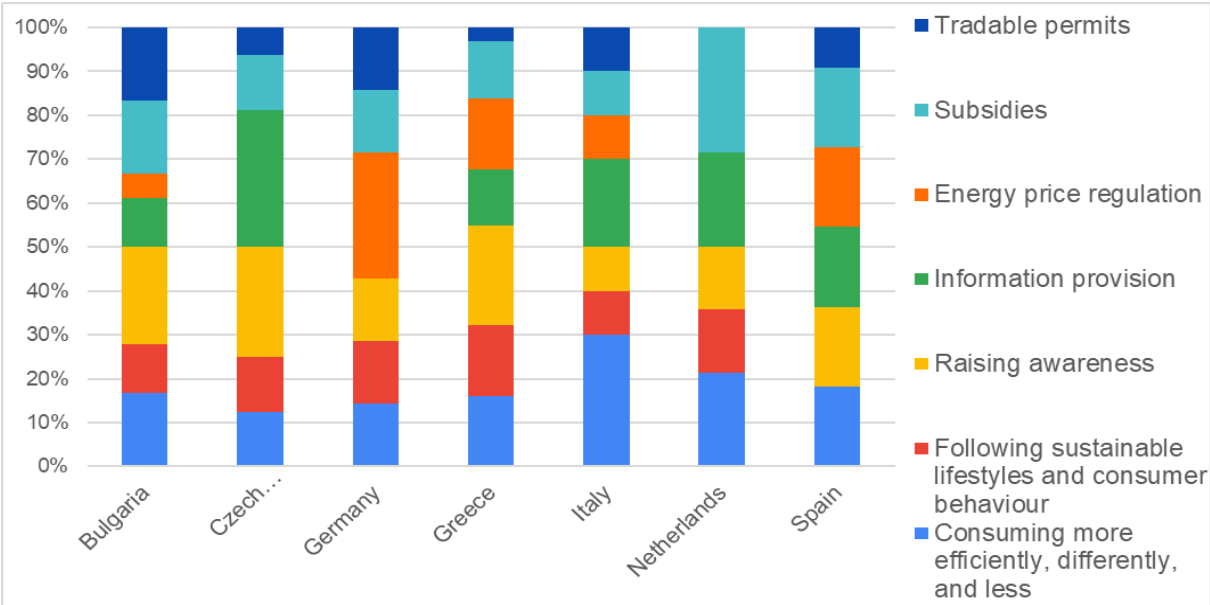


Figure 4: Appropriate behavioural risk mitigation strategies per case study country

**Energy market and regulatory risk**

The Risk Mitigation Strategies options provided to respondents were:

- Hedging with future contracts
- Clear long-term government tax policy on energy
- Fixed-price energy contracts
- Hedging with forward contracts
- No answer
- Hedging with option contracts

- Setting aside risk reserve
- Hedging with swaps
- Establishing caps and floors on the energy price

The energy market and regulatory risk mitigation strategies that can be found in the responses for all countries are the *clear long-term government tax policy on energy and hedging with future contracts**Error! Reference source not found.*. Another risk mitigation strategy, not observed in Germany but with

significant shares in all other countries, are the *fixed-price energy contracts*. *Hedging with forward contracts* holds significant shares (25% of responses) in Netherlands and Germany,

while *setting aside risk reserve* is significant (>15% of responses) only in Bulgaria and *establishing caps and floors on the energy price* is important mainly in Italy.

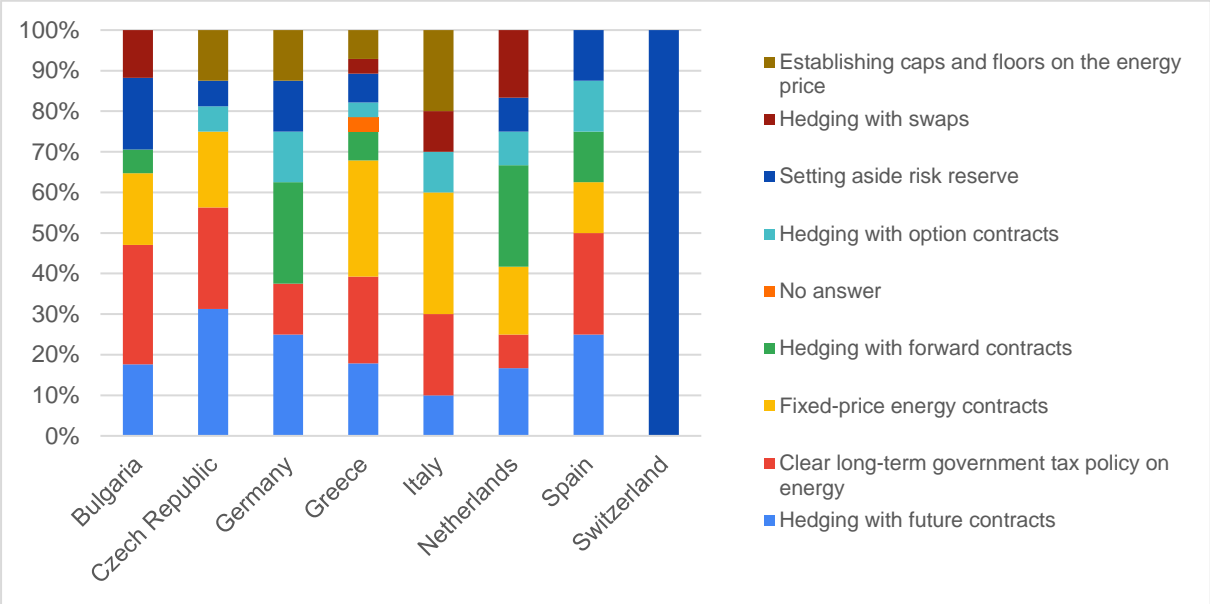


Figure 5: Appropriate energy market and regulatory risk mitigation strategies per case study country

**Economic risk**

The Risk Mitigation Strategies options provided to respondents were:

- Hedging with option contracts
- Hedging with future contracts
- Long term fixed interest rates
- Hedging with forward contracts
- Hedging with swaps
- Setting aside risk reserve

The economic risk mitigation strategies that can be found in the responses across all countries are the *long-term fixed interest rates*, *hedging with future contracts* and *setting aside risk reserve*. *Hedging with option contracts* holds significant shares (>15% of responses) in Italy, Spain, and

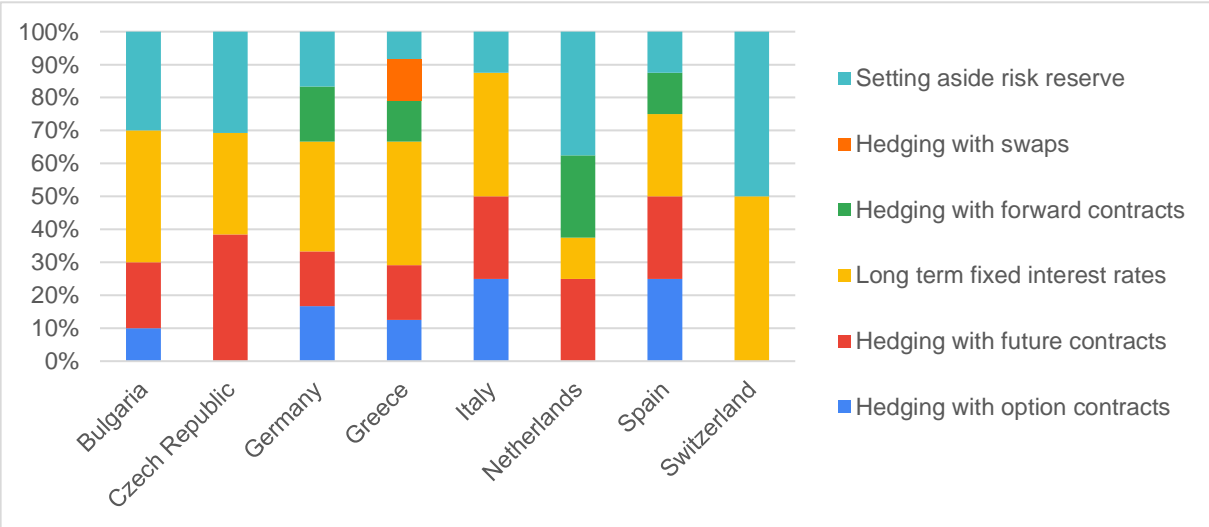


Figure 6: Appropriate economic risk mitigation strategies per case study country

Germany, while *hedging with forward contracts* overcomes 20% of responses only in Germany.

### **Technological, planning, & operational risk**

The Risk Mitigation Strategies options provided to respondents were:

- Diagnostics
- Energy savings guarantees or insurances
- Performance bonds
- Standards in project development and documentation
- Maximum visibility into operational behaviour
- Following the guidelines of operations manual
- Standardised and transparent M&V processes
- Insurances required by the law
- Equipment insurances
- Accreditation and certification of suppliers
- Efficiency as a Service models
- Adopting advanced and mature technology

- Reduction of delays caused by poor communication
- Selection of subcontractors with high reputation and good technology
- Standardised performance protocols
- Detailing risk and loss bearing in the contract
- Proper metering
- Model validation

The technological, planning, and operational risk mitigation strategies that are observed across all countries are the *energy savings guarantees or insurances*, the *accreditation and certification of suppliers*, *standards in project development and documentation* and *adopting advanced and mature technology* (*Hedging with option contracts* holds significant shares (>15% of responses) in Netherlands, Spain and Germany, while the strategy suggesting *selection of subcontractors with high reputation and good technology* is significant only in Italy.

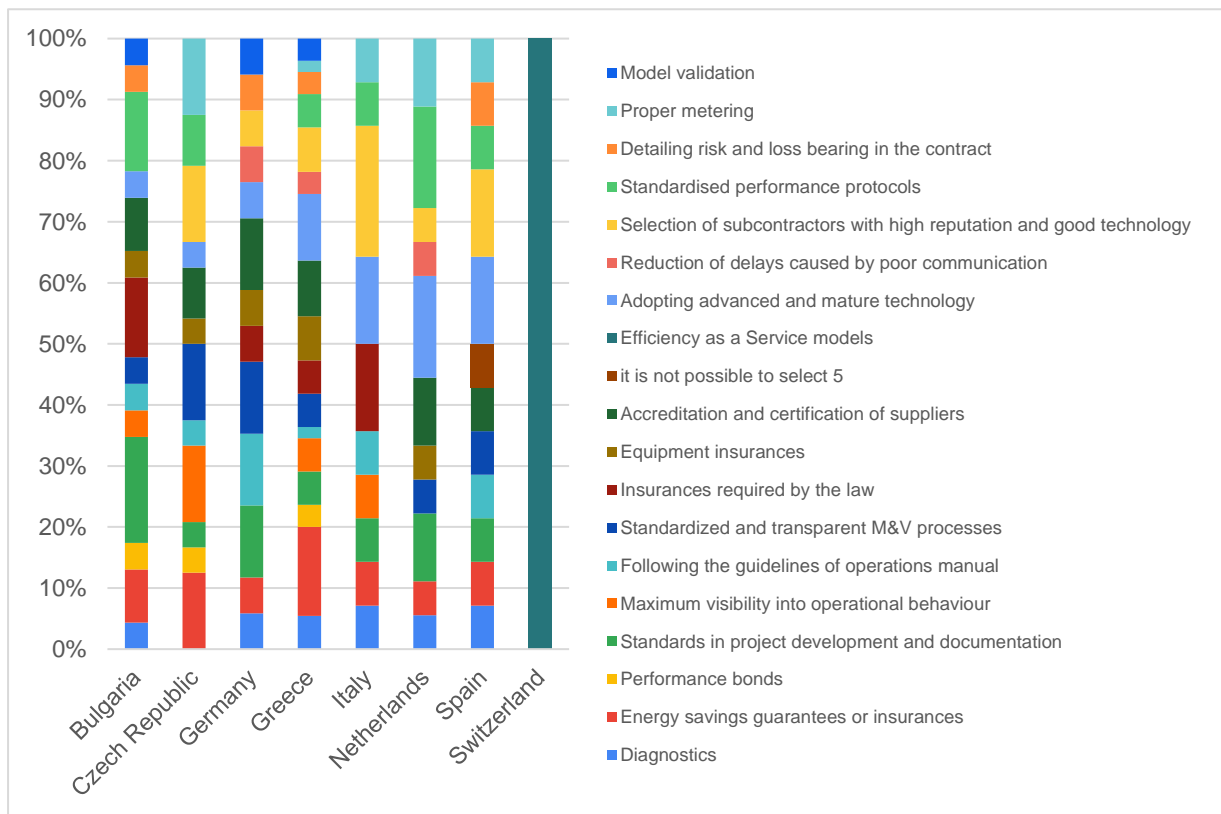


Figure 7: Appropriate technological, planning, and operational risk mitigation strategies per case study country



## 3.2 Financing instruments

The identified financing instruments that have been provided as options to the respondents emerged from the “Triple-A’s Final Report on Risks of Energy Efficiency Financing and Mitigation Strategies Typology”<sup>5</sup>. The respondents had to select the i) applicable and the ii) most important financing instruments for their country. The options given were:

- Energy Performance Contracting
- Third party financing
- Efficiency-as-a-Service
- Revolving Funds
- Guarantee Funds
- On-bill financing
- Energy Efficiency Mortgages
- Crowdfunding
- Energy cooperatives
- Property Assessed Clean Energy

Also, the respondents could provide their own comments and add more options, if needed.

According to the questionnaire responses, the most applicable financing instruments for implementing energy efficiency investments across the case study countries are *loans*, *soft loans*, *green bonds*, *grants/subsidies*, and *project financing*. Based on this outcome, a cross-case comparison was made on the

importance of each of these financing instruments.

Experts from Netherlands and Spain highlight the importance of *loans*, all providing “High” or “Very High” responses, while the percentage for the respective responses in Bulgaria, Czech Republic, Germany, and Greece ranges from 50% to a bit more than 70%. On the contrary, more than 30% of Bulgarian and Italian stakeholders consider loans to have low or very low importance.

All Spanish experts value *soft loans* as a financing instrument of high or very high importance, while in all the other case study countries this percentage drops to 50-60%. The rest of the experts from Germany, Greece, Italy, and Netherlands label *soft loans* as of medium importance, while half of Bulgarian stakeholders consider this financing instrument not that important.

With regards to *green bonds*, more than half the of Bulgarian, Czech, Italian, and Dutch experts categorise this financing instrument in the “Low” or “Very Low” scales of importance and more than 20% from each country, apart from Czech Republic, consider it as being of medium importance. On the contrary, more than half of

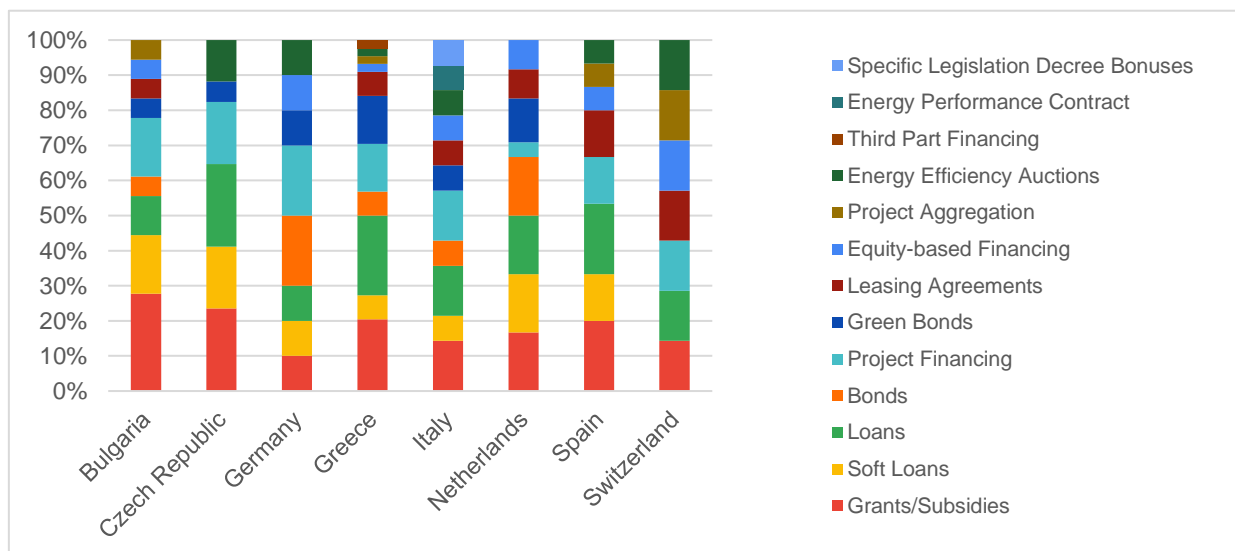


Figure 8: Applicable financing instruments per case study country

<sup>5</sup> Available here: <https://aaa-h2020.eu/sites/default/files/reports/D3.2%20Final%20Rep>

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the German, Greek and Spanish stakeholders deem *green bonds* as highly or extremely important.

All Bulgarian and Spanish stakeholders consider *grants/subsidies* as a financing instrument of very high or high importance, while the respective percentage for Czech Republic, Italy, and Netherlands is 65-80%. The responses of German experts are balanced between “Very High” or “High” and “Medium”, while 50% of the responses from Greek stakeholders is “Low” or “Very Low”.

### 3.3 Financial schemes

The identified financing instruments that have been provided as options to the respondents emerged from the “Triple-A’s Final Report on Risks of Energy Efficiency Financing and Mitigation Strategies Typology”<sup>6</sup>. The respondents had to select the i) applicable and the ii) most important financing instruments for their country. The options given were:

- Energy Performance Contracting
- Third party financing
- Efficiency-as-a-Service

All Bulgarian and Italian experts consider *project financing* as an instrument with very high or high importance. 50-66% of stakeholders from the Czech Republic, Germany, and Spain rated *project financing* in the “Very High” or “High” importance scales, while the rest of the stakeholders from these countries indicated medium importance. For Greece and Netherlands, 25% of the responses for this instrument are “Low” or “Very Low”, while 37% and 50% of the stakeholders, respectively, suggest medium importance.

- Revolving Funds
- Guarantee Funds
- On-bill financing
- Energy Efficiency Mortgages
- Crowdfunding
- Energy cooperatives
- Property Assessed Clean Energy

Also, the respondents could provide their own comments and add more options, if needed.

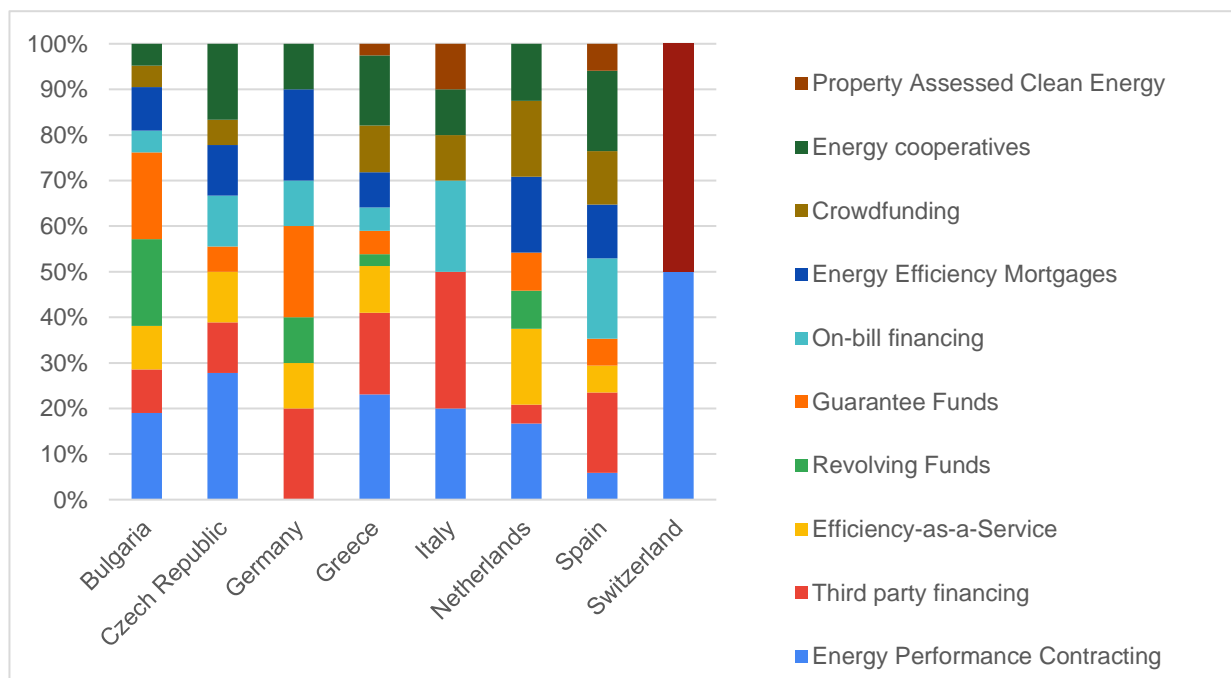


Figure 9: Applicable financial schemes per case study country

<sup>6</sup> Available here: <https://aaa-h2020.eu/sites/default/files/reports/D3.2%20Final%20Rep>

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According to the questionnaire responses, the most applicable financial schemes for implementing energy efficiency projects across the case study countries are *energy performance contracting*, *efficiency-as-a-service*, *third-party financing*, *energy efficiency mortgages*, and *energy cooperatives*. Given this result, we compare the importance of each of these financial schemes across case studies.

All Czech, Italian, Dutch, and Spanish experts as well as the vast majority (90%) of Greek stakeholders consider *energy performance contracting* as a very or extremely important financial scheme for energy efficiency. This percentage drops to 60% for Bulgaria, while all German experts categorised the importance of this scheme to the “Low” or “Very Low” scales.

While Bulgarian stakeholders ranked *efficiency-as-a-service* in the “Very High” or “High” importance scales, the Italian experts’ responses were equally spread across the “Medium” and “Low” or “Very Low” importance scales. Half of the German and Greek stakeholders consider that this scheme has average importance.

All Bulgarian stakeholders consider *third-party financing* as a financial scheme that is of high or very high importance. At least half of the responses coming from German, Dutch, and Italian stakeholders rated this scheme in the “Very High” or “High” importance scale. Conversely, Greek and Czech experts put the lowest emphasis in *third-party financing*.

Most of the Bulgarian and Spanish experts value the importance of *energy efficiency mortgages*, while this is not the case for Italian and the majority of Czech, Greek, and Dutch stakeholders.

Finally, with regards to *energy cooperatives*, at least half of the Czech, German, Italian, and Dutch experts find this scheme very or extremely important. On the contrary, the responses of Greek and Spanish stakeholders

are almost equally spread across the importance scales, while all Bulgarian stakeholders rate the importance of this scheme in the “Medium” scale.

## 4 Conclusions

Key conclusions regarding the categorisation of risk mitigation strategies, financing instruments and financial schemes for energy efficiency investments are summarised below:

- Common strategies for mitigating different types of energy efficiency investment risks have been identified across the Triple-A case study countries, such as *subsidies*, *raising awareness regarding energy consumption*, *clear long-term tax legislation*, *energy savings guarantees*, etc. Of course, these strategies may need to be properly adapted to account for the specificities of each geographical context in relation to the implementation of energy efficiency investments.
- *Loans*, *soft loans*, *green bonds*, *grants/subsidies*, and *project financing* are the most applicable financing instruments for implementing energy efficiency investments across the case study countries, according to questionnaire responses. However, significant differences regarding the importance of *green bonds* can be observed from country to country.
- *Energy performance contracting*, *efficiency-as-a-service*, *third-party financing*, *energy efficiency mortgages*, and *energy cooperatives* are the most relevant financial schemes for implementing energy efficiency projects across the case study countries, according to the questionnaire replies. *Energy performance contracting* is considered a key financial scheme by the most of participating experts, while *third-party financing* can also be considered as another promising scheme for EU member states.

### TRIPLE-A IN BRIEF

Triple-A -Enhancing at an Early Stage the Investment Value Chain of Energy Efficiency Projects - is an EU-funded research project under the Horizon 2020 programme, aiming to assist financial institutions increase their deployment of capital in energy efficiency, making investments more transparent.

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