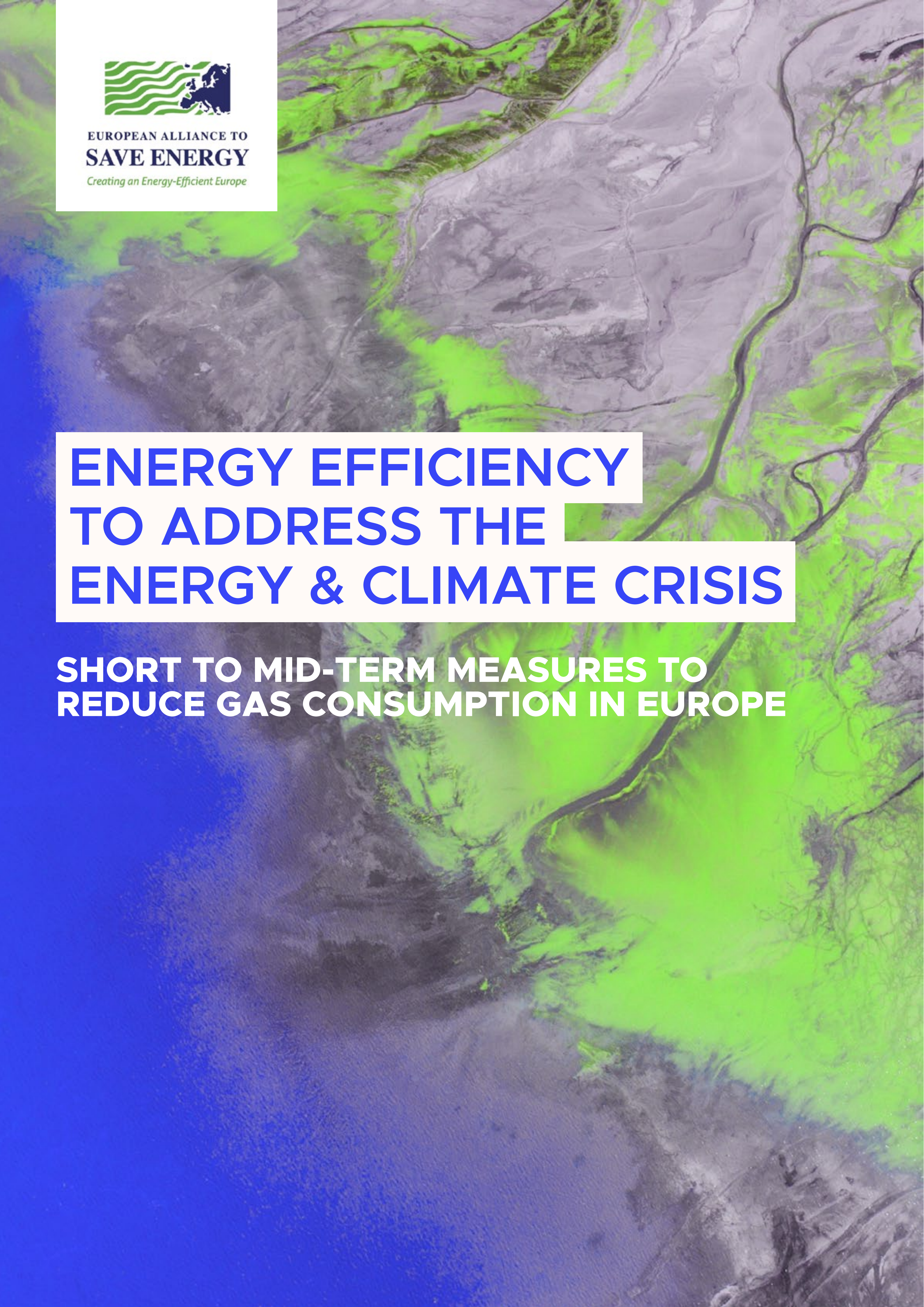
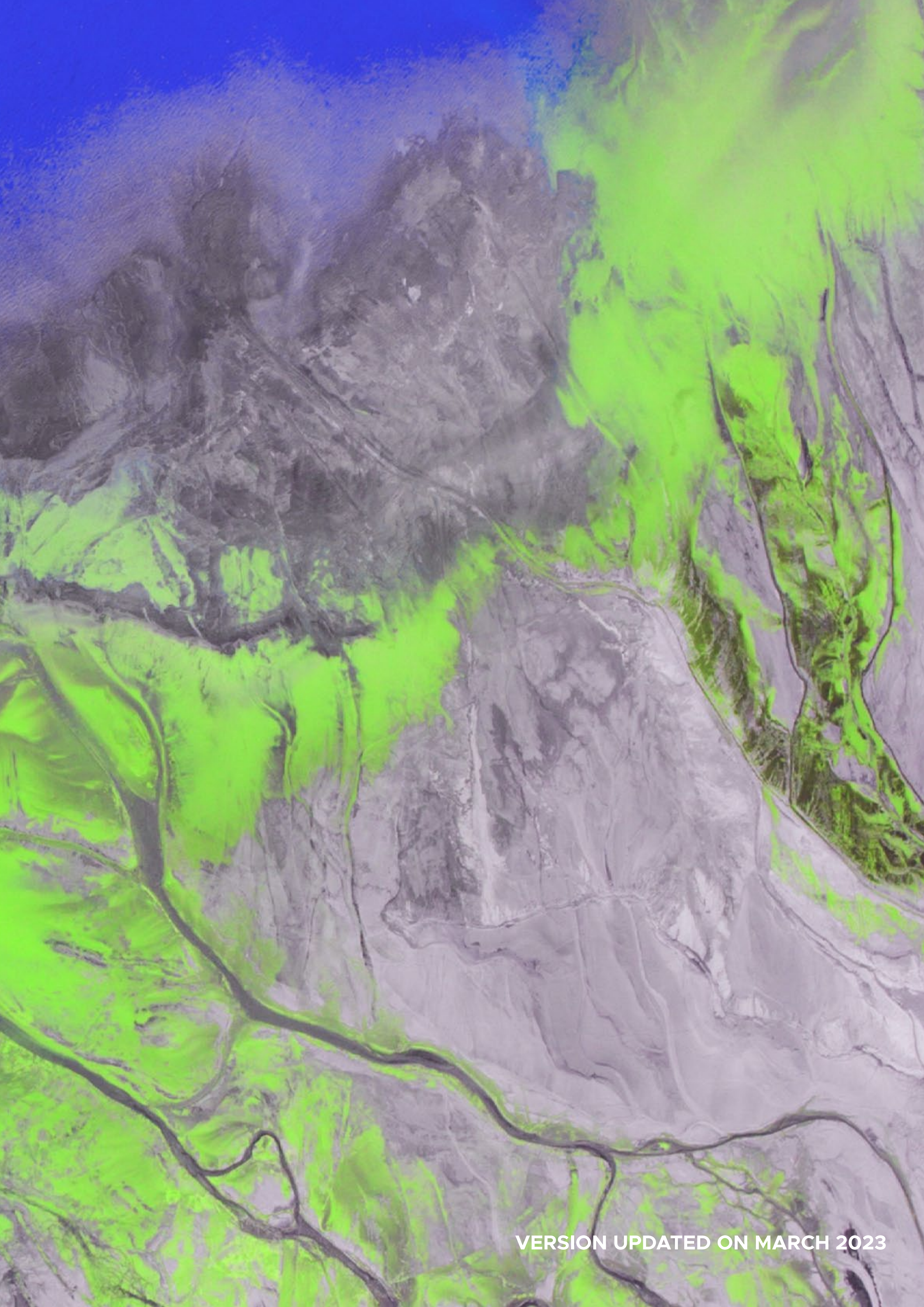
EUROPEAN ALLIANCE TO
SAVE ENERGY
Creating an Energy-Efficient Europe



ENERGY EFFICIENCY TO ADDRESS THE ENERGY & CLIMATE CRISIS

SHORT TO MID-TERM MEASURES TO REDUCE GAS CONSUMPTION IN EUROPE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INTRODUCTION

The Russian invasion of Ukraine has exacerbated the energy crisis. Energy prices are exponentially rising for citizens and businesses, and as foreseen by the EU Agency for the Cooperation of Energy Regulators (ACER), they are expected to remain high and volatile for several years.[1] The European Union's energy security is challenged because of its great dependency on fossil fuels, but especially concerning fossil gas which is mostly imported from Russia.

With its REPowerEU Communication,[2] the European Commission sets the objective to reduce fossil gas imports from Russia by two thirds by the end of the year 2022, and ultimately make the EU independent from Russian fossil fuels well before 2030. By mid-May, the Commission supplemented the communication with an action plan to enact this objective through more concrete recommendations on promoting energy efficiency and renewable energy.[3]

In 2021, the EU imported 155 billion cubic meters (bcm) of fossil gas from Russia. It represents almost half (45%) of the EU's total gas imports and nearly 40% of the total amount used. Part of the fossil gas the EU imports is used for space and water heating, making the decarbonisation of the heating and cooling sector paramount in the EU's plan to cut its dependency on Russian gas. 40% of the EU gas demand goes to the residential sector, followed by industry. While industry consumption of gas has been declining by 20% since 2000, gas demand has increased in the same period for power generation.[4] Indeed, it is worth mentioning the importance of indirect use of gas, as in 2020 more than 20% of the total EU27 production of electricity came from natural gas.[5]

On June 20, the European Commission released a complementary modelling analysing the impact of the energy efficiency target in the Energy Efficiency Directive recast (EED), going from the initially proposed 9% based on the 2020 reference scenario, to a level of target of at least 13% and 19% efficiency by 2030. The paper demonstrates that an increase from a 9% to a 13% target in the EED, paired with an increase of the target in the Renewable Energy Directive (RED) to a level of 45% can reduce the EU's net total gas imports from 233 bcm to 117 bcm.

In light of the recent developments occurring in Europe and taking into account the findings of the IPCC report published in April 2022,[6] investing in energy efficiency has never been more relevant to save energy for the benefit of citizens and businesses. There is tremendous potential for reducing energy demand and optimise consumption across sectors including buildings, industry, water utilities and transport that is currently untapped. This potential can be realised with existing technologies and solutions made in Europe.

The paper is structured as follows:

1. Measures deploying existing technologies and solutions
Area 1: Upgrading building's technical systems (Measures 1 to 4)
Area 2: Reducing energy needs through passive energy efficiency solutions (Measures 5 to 8)
Area 3: Upgrading EU lighting systems (Measure 9)
Area 4: Delivering water and energy savings (Measure 10)
Area 5: Achieving a more efficient and decentralised energy system (measures 11 and 12)

2. Measures enhancing the regulatory and policy framework (Measures 13-20)

1. Annual report on the Results of Monitoring the Internal Electricity and Natural Gas Markets in 2021, ACER/ CEER, October 2022
2. REPowerEU: Joint European Action for affordable, secure and sustainable energy, European Commission, March 2022
3. Communication on the REPowerEU plan, European Commission, May 2022
4. Gas Factsheet, European Union Agency for the Cooperation of Energy Regulators, July 2021
5. Gross Electricity production in EU27, Eurostat, 2020
6. Climate Change 2022, Mitigation of Climate Change, IPCC, April 2022

KEY FINDINGS

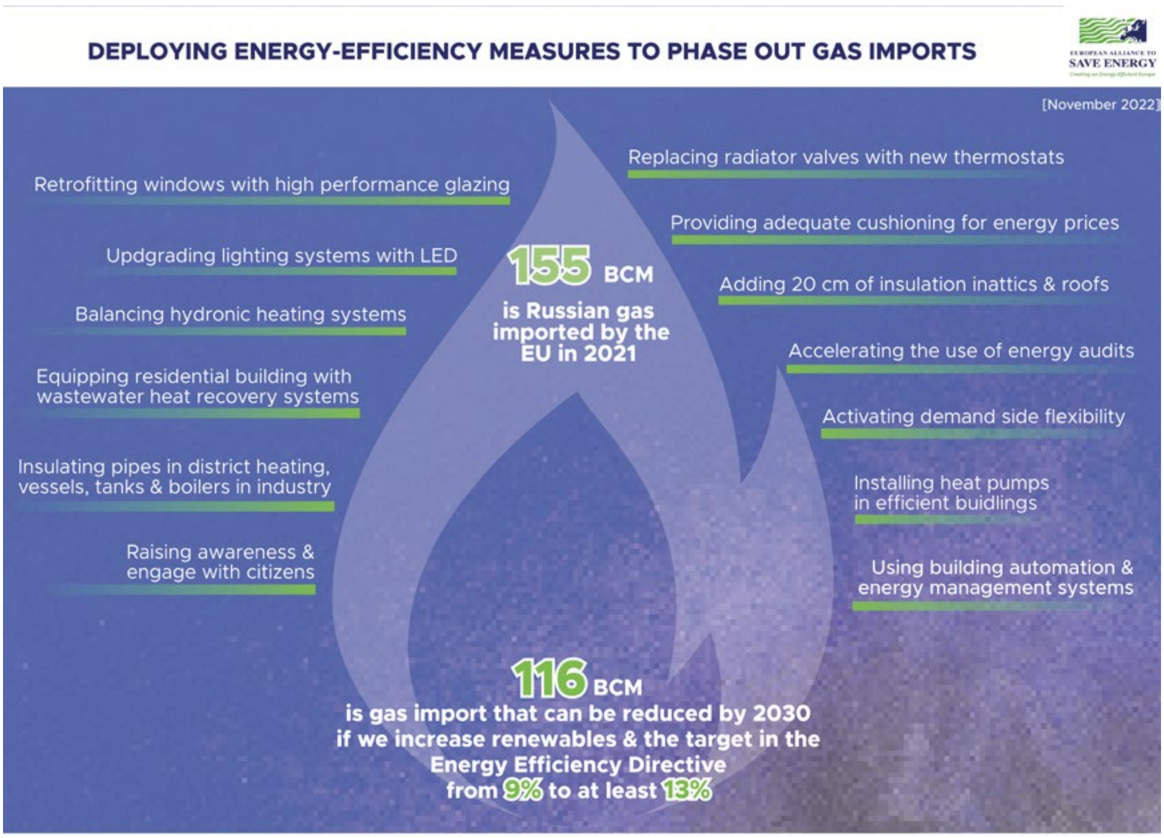
This paper is the contribution from major industry players to develop a non-exhaustive catalogue of short and mid-term actions to invite policymakers at EU, national and local level, to apply the Energy Efficiency First principle and prioritise active and passive energy saving measures that can deliver simultaneously short-term benefits to alleviate the energy price crisis and longer term, systemic changes to tackle the devastating impact of climate change.

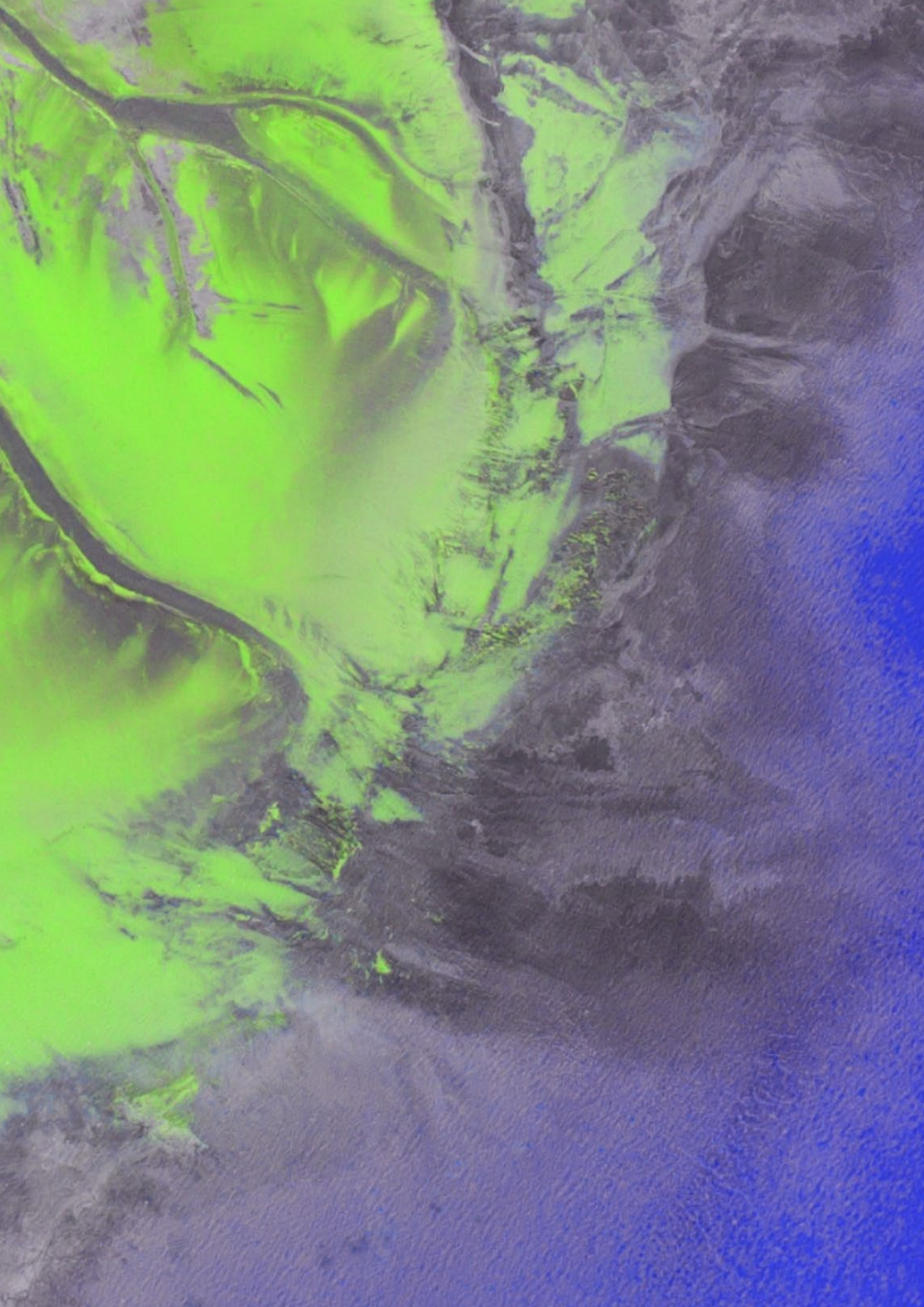
The catalogue identifies a non-exhaustive list of energy efficient technologies and solutions that can be speedily implemented in the short to mid-term, with the objective for the EU to phase out Russian fossil gas, as soon as possible, with energy savings.

The untapped energy savings potential of each solution in this catalogue shows that the EU can completely phase out Russian fossil gas without need for investments in further energy generation capacities. Overall, upgrading buildings and existing infrastructure through cost-effective solutions that can be quickly scaled up clearly shows that energy savings can replace Russian gas.

The estimated bcm of natural gas savings elaborated in relation to each energy efficiency measure listed have been conducted on the basis of industry estimations and data extracted from various documents and sources which apply different calculation methodologies and reference scenarios. The energy unit conversions to bcm of natural gas have been done using the conversion factor from BP.[7] Some figures related to the estimation of bcm of gas saved have been rounded down for the sake of simplicity.

7. Approximate conversion factor by BP, updated July 2021





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MEASURES DEPLOYING EXISTING TECHNOLOGIES AND SOLUTIONS

MEASURES 01-12

1

BUILDING AUTOMATION AND ENERGY MANAGEMENT SYSTEMS

Building automation and control systems (BACS) monitor and automatically adjust energy use in buildings by using technologies like software and engineering services to deliver a comfortable environment.

The energy savings potential of BACS is known. Article 14.4 of the Energy Performance of Buildings Directive (EPBD) mandates Member States to lay down requirements to ensure that non-residential buildings with an effective rated output for heating systems or systems for combined space heating and ventilation of over 290 kW are equipped with building automation and control systems by 2025. In addition, the Commission's proposal to revise the EPBD lowers the threshold for the effective output for these systems to 70 kW by 31 December 2029.

In the framework of the REPowerEU objectives, BACS quick return on investment makes them a very smart option to boost energy efficiency in the EU's building stock. Installing BACS is an essential part of any renovation project. It requires small upfront costs estimated in 30€/m2 in non-residential buildings and 12€/m2 in residential buildings, and according to industry estimates, the value of savings generated exceeds the value of investments by a factor of 9.[8] An ambitious transposition of the BACS measures included in the revised EPBD could lead to savings corresponding to 14% of the total building stock final energy consumption by 2038. This gives rise to 450 TWh of annual final energy savings, 64 Mt CO2 annual savings and €36 billion saved in energy bills.

This level of annual energy savings equals to 45 bcm of fossil gas saved per year,[9] about 29% of the EU's 2021 imports from Russia.

8. The impact of the revision of the EPBD on energy savings from the use of building automation and controls, Waide Strategic Efficiency Limited, 2021
9. 450 TWh converts to 38.69 Mtoes according to the IEA online unit converter. 38.69 Mtoes is equivalent to 46.06 bcm of natural gas using the approximate conversion factors by BP

GEARING UP HEATING CONTROLS

As underlined by the International Energy Agency's 10-point plan[10] for Europe to decrease dependency on Russian gas issued in March 2022, installing smart heating controls is a simple process that can be scaled up quickly. According to the IEA's forecast, tripling the current installation rate of about one million homes per year would reduce gas demand for heating homes by an extra 200 mcm a year at a total cost of €1 billion.[11] As highlighted by the Agency, existing programmes such as subsidies to households can help incentivising these devices.

Industry estimates show that there are around 70 million homes in the EU that still only have manual radiator valves (MRVs) on their radiators.[12] This effectively means that around 500 million radiators in the EU can be upgraded to thermostatic radiator valves (TRVs). If they were so, the annual EU energy saving would be of 130 TWh of energy per year. In addition, if all the more than 20 years old TRVs would be upgraded, the amount of annual savings could be increased to 160 TWh while reducing Europe's CO2 emissions by 29 million tonnes and nearly €12 billion from the energy bills of EU citizens.

This level of annual energy savings equals to almost 16 bcm of fossil gas saved per year, about 10.32% of the EU's imports from Russia in 2021.

In addition to these technological upgrades, the IEA incentivises some related behavioural changes such as lowering the thermostat in building heating systems would deliver immediate annual energy savings of around 10 bcm of gas for each degree of reduction, while also bringing down energy bills for households.[13] At the scale of a city like Paris, with about a third of the building not yet equipped and an average of 2,35 mcm of gas to be saved per 10000 dwellings, this could represent 117 mcm of fossil gas saved in a year.

10. A 10 point Plan to Reduce the European Union's Reliance on Russian Natural Gas, IEA, March 2022
11. A 10 point Plan to Reduce the European Union's Reliance on Russian Natural Gas, IEA, March 2022
12. Room temperature controls : how the EU is missing an opportunity for substantial energy savings, eu.bac, 2021
13. A 10 point Plan to Reduce the European Union's Reliance on Russian Natural Gas, IEA, March 2022

HYDRONIC BALANCING OF HEATING SYSTEMS

Hydronic balancing of heating systems improves how heating and cooling is distributed from the central system to points of end-use. Currently, about 5 to 10% of heating energy is wasted in the process, a problem that concerns around 16 million residential buildings in Europe.

Studies find that the total potential savings across the EU housing sector of the deployment of hydronic balancing of heating systems could save 22.6 Mtoe.[14]

This level of annual energy savings equals to 26.28 bcm of fossil gas saved per year, about 16.95% of the EU's imports from Russia in 2021.

For example in Germany, there are at present about 18.9 million residential buildings of which approximately 84% are supplied by a central heating system.[15] It is estimated that 85% of residential buildings do not have optimised hydronic balancing. By retrofitting hydronic balancing, 2.5 to 16 kWh/m2 of energy can be saved annually. For existing residential buildings with radiator heating and existing pre-settable thermostatic valves, these energy savings lead to amortisation times of approximately 8 to 9 years (single-family dwelling) or approximately 3.5 to 4 years (multi-family dwelling) for retrofit of hydronic balancing.

14. Energy Savings Across EU Domestic Building Stock by Optimizing Hydraulic Distribution in Domestic Space Heating Systems, Technological University of Dublin, 2015
15. Potential Energy Savings and Economic Evaluation of Hydronic Balancing in Technical Building Systems, ITG Dresden, 2019

4 ENERGY EFFICIENCY PROGRAMMES COMBINING INTEGRATION OF RENEWABLE ENERGY AND ELECTRIFIED HEAT IN BUILDINGS

As recommended in the last IPCC report, higher renovation rates and deep renovations improving the building envelope are crucial to achieve climate neutral buildings.[16] The report underlines the importance of programmes combining energy efficiency and renewable energy measures.

In alignment with the Energy Efficiency First principle, a deployment of heat pumps needs to be accompanied by energy efficiency measures reducing the overall energy demand of a building to achieve best-in-class efficiency results at a building and electricity grid level.

Heat Pumps deliver heat even at 600% efficiency depending on overall building energy performance levels compared with a gas heater at 50% to 95% efficiency.[17] The IEA says that by speeding up the anticipated deployment of heat pump by doubling the current EU installation rates would save an additional 2 bcm of gas use within the first year (about 1.3 of the EU's gas import from Russia in 2021), requiring a total additional investment of EUR 15 billion).

There were almost 2 million heat pumps installed in Europe in 2021. The European Commission's REPowerEU communication estimates 10 million heat pumps to be deployed by 2027 and a total of 30 million by 2030, bringing savings of 35 bcm of gas.[18] The rapid installation of heat pumps, paired with the increased energy performance of buildings, should be therefore promoted.

Phasing out 35 bcm of gas corresponds to 22.5% of the EU's 2021 imports from Russia.

16. Climate Change 2022, Mitigation of Climate Change, IPCC, April 2022
17. Back to basics : Heat Pumps, Energy Efficiency Council
18. REPowerEU: Joint European Action for more affordable, secure and sustainable energy, European Commission, March 2022

5 BUILDING INSULATION IN ATTICS AND ROOFS

Installing or upgrading insulation is one of the best solutions to reduce heat losses in buildings. The IEA 10-points plan also highlights that achieving an annual rate of building renovations of 1.7%, targeting the least efficient homes and non-residential buildings would be possible through standardised upgrades, mainly via improved insulation.

The Buildings Performance Institute Europe (BPIE) estimates that by insulating attics and roofs in Europe, notably adding 20 cm of insulation, would save 254 TWh per year, representing up to 14% of heating energy demand in the EU's residential sector in 2020.[19] As BPIE argues, this is a technically simple measure that can be scaled up quickly, by laymen guided by expert installers.

This level of annual energy savings equals to 25.4 bcm of fossil gas saved per year, about 16.4% of the EU's 2021 imports from Russia.

19. Solidarity and Resilience: An Action Plan to Save Energy Now!, BPIE, March 2022

6 HIGH-PERFORMANCE WINDOWS AND DOUBLE-GLAZING

The European building stock is generally equipped with very inefficient windows. Most of them are single glazed, which is partly responsible of significant thermal losses from buildings.

A 2019 study finds that doubling the window replacement rate, increasing from 2% annually to 4% with high energy performance glazing on both existing buildings and new buildings could save 75.5 Mtoe a year by 2030 in the EU27 + UK. This is equivalent to a reduction of energy consumption for heating and cooling of more than 29% if all of Europe's buildings were equipped with high-performance glazing.[20]

> **This level of annual energy savings equals to 87.8 bcm of fossil gas saved per year, about 56.6% of the EU's 2021 imports from Russia.**

20. Potential Impact of High Performance Glazing on Energy and C02 Savings in Europe, TNO, 2019

7 TECHNICAL INSULATION IN INDUSTRY

Technical insulation improves the energy efficiency of industrial equipment like valves, tanks, air ductworks, pipe networks or heating systems that need to function at high temperatures.

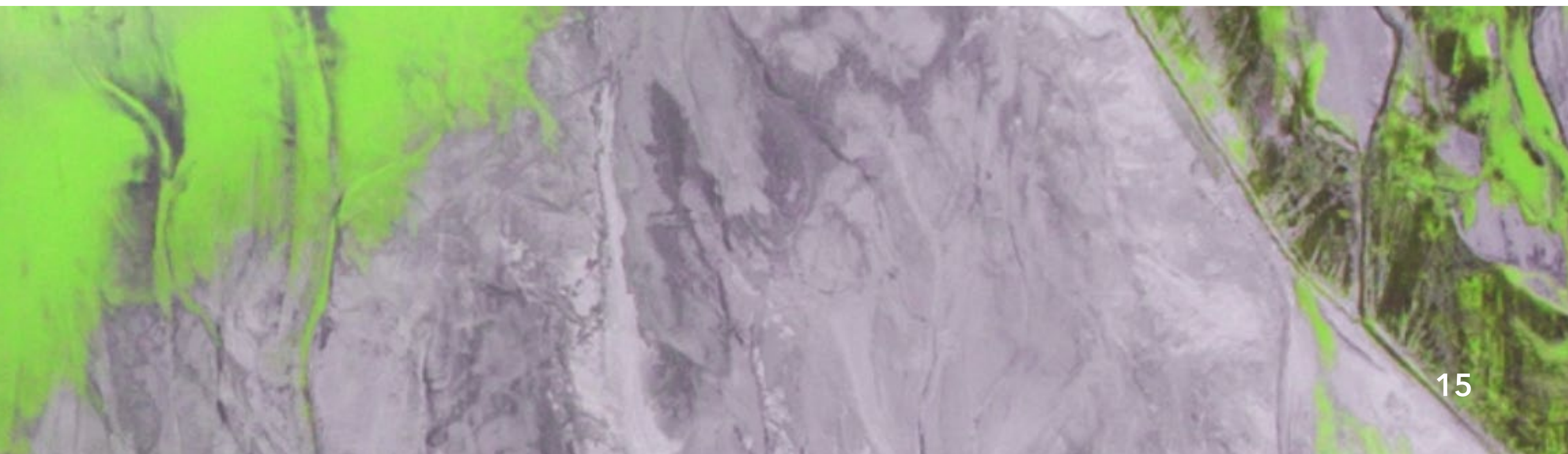
According to the European Industrial Insulation Foundation (EiiF), improving the technical insultation of pipes, vessels, tanks and boilers in industry across the EU27 could bring annual saving of about 140 TWh.[21] This potential can be achieved by applying class C systems (based on VDI 4610 part 1) and it is equivalent to the annual energy consumption of more than 10 million households.

This level of annual energy savings equals to 14 bcm of fossil gas saved per year, about 9% of the EU's 2021 imports from Russia.

A single country like Germany could save 18 TWh (1.550 Ktoe or 1,7 bcm) in Russian gas imports. This is the equivalent of the average annual gas consumption of 1,5 million households. Additionally, 5 TWh (430 Ktoe or 510 mcm) could be saved in buildings, without taking into account the potential of single-family houses.

It is important to note that 75% of the total EU27 potential can be realised immediately, without needing any shutdown of the industrial plant concerned. Investments in technical insulation have a payback of 2 years. In addition to audits, light financial incentives could facilitate the transition. At current gas prices (115€/MWh), the total savings would reduce the gas bill by €9,8 billion.

21. Data retrieved from the European Industrial Insulation Foundation, EIIF



8

INSULATED PIPES IN DISTRICT HEATING

Throughout Europe, an average loss of approximately 18% of heat happens because of an ineffective heat distribution structure. By installing new pre-insulated pipes, redesigning and digitalising the distribution system, it is possible to halve thermal losses and reduce energy consumption. Thanks to industry estimations,[22] using today's design principles and pre-insulated pipes, it is possible to reduce the heat loss of heating systems of about 70%.

Furthermore, current design principles and pre-insulated pipes enables the transportation of industrial surplus heat and hot water (86 C) over 20 kilometres with a temperature drop of less than 1 degree C. This makes it possible to tap into the potential of excess heat from industrial sites, data centres and commercial activities to use on the industrial site or to inject into district heating to meet Europe's building heat demand.

22. LOGSTOR calculator, Kingspan

LED AND SMART LIGHTING

According to industry estimates, there are still more than 2 billion conventional light points in the European Union member states in professional and residential segments. Upgrading conventional light points with efficient LED light source and smart lighting could save 193 TWh every year. Considering the latest electricity price increase compared to 2022, the upgrade would deliver monetary savings of a scale of €65 billion. The saving would be paid back in less than 2 years after the installation, while creating thousands of new jobs and reducing the carbon footprint by 51.6 million tons of CO2, the equivalent to 185 power units or to the absorption capacity of 2.3 billion trees.[23]

This level of annual energy savings equals to 18.85 bcm of fossil gas saved per year, about 12.16% of the EU's pre-war imports from Russia.

The electricity saved is available to support the electrification process and could annually power 47 million heat pumps or recharge of 55 electric cars. Lighting is an easy, fast solution to reduce energy consumption. The upgrade of the installation is in most of the cases simply a matter of changing a bulb or replacing the luminaire without any modification to the existing electrical system or building construction. Smart lighting can further bring savings to an already efficient lighting system by switching it off when not needed or dimming to the right light levels benefitting from natural light or adjusting to adequate healthy and safe levels.

Cities alone spend up to 20% of their electricity bill for roads and streets lighting. The impact on their balance sheet by upgrading their lighting system is huge as LED lighting can save up to 70% of electricity. Indeed, the upgrade of the existing 45 million conventional street light points to LED; could effectively generate electricity savings of 23 TWh. A medium sized city of 200.000 people could annually save 9 GWh in street lighting equivalent to €3.0 million and 23 GWh in public buildings equivalent to €7.5 million.

One further step could be the adoption of solar and hybrid solar-powered streetlights: it is estimated that 31.5 TWh of electricity consumption from the grid could be saved.

It is also relevant to consider that any immediate saving of electricity by lighting can compensate the growing additional demand for EV charging, thus enabling cities transition to electric mobility.

In the residential segment, a single household with still 5 compact fluorescent lamps, 1 incandescent lamp and 4 halogen lamps, for instance, moving to LED lighting could save 68.4 kWh equivalent to €49.21 and pay back the investment in 1.4 years only.

23. EU data retrieved by Signify based on a simulation presented as illustrative and on forecast and assumptions

10

TECHNOLOGIES TO REALISE THE WATER-ENERGY NEXUS

A wide spectrum of readily available technologies could deliver significant energy and water savings in manufacturing and water management plans, as well as across European households, thus contributing to significantly reducing gas consumption. Some examples of these technologies include notably:

IN PUBLIC WATER UTILITIES

Intelligent pumps for wastewater management can save up to 70% energy per utility with 80% inventory reduction, e.g. lowering costs for utilities.

Adaptive mixers that automatically match output to demand can achieve 47% energy savings by applying variable thrust based on aeration conditions

Efficient aeration systems represent 30-70% energy costs in wastewater treatment. Turbo Blowers provide for 30-40% lower energy losses and efficient bubble aeration systems.

Biogas mixers can be deployed at wastewater treatment plants for biogas production from sewage sludge. They provide for minimum energy consumption due to high efficiency in biogas media and the produced biogas can be reintroduced as renewable energy source to the utility with excess energy exported back into the grid. This allows for energy positive utilities that are going forward to contribute to the REPowerEU target of biomethane production of 35 bcm per year by 2030.

Digital technologies save energy consumption for water utilities. They run thousands of scenarios, collect real-time data and identify tailored solutions. With existing digital technologies, wastewater treatment plants of 400,000 p.e. size can reduce 26.3% of their energy use per year that is equivalent to savings of 1.1 million kWh per year and equivalent to in costs savings 330.000/a.

Digital twins have major impact in supporting the optimisation of wastewater networks and treatment processes and hence on energy efficiency. A digital twin is a digital replica of a device or product that can be modelled to use in simulation or prediction of behaviour. Digital twins can represent assets from the physical world and the digital world. On wastewater treatment they enable an optimisation of wastewater treatment processes with machine learning and reduce the energy consumption by up to 30% for 350.000 p.e. plant. This is obtained without the need for building new treatment infrastructure and allows to stay at low capital investment. Beyond its use for wastewater purposes, digital twins are also a powerful way of providing actionable energy-saving insights across other utilities. Optimising operations requires an understanding of the essential role of water, particularly as an energy transfer medium. For instance oil refining between 35% and 47% of the site's total energy is transferred in steam production and cooling water.

IN ENERGY PRODUCTION AND INDUSTRY

Advanced water treatment technologies in conventional thermal power plants can typically increase their energy efficiency performance by 1 to 2%. The on-site monitoring, evaluation and quantification of improvement for the cleanliness of water condensers and cooling towers reduces energy consumption needed to produce electricity. For a 550MW plants, this represents annual energy savings as high as 178.4 million kWh. The technology has a high return on investment with a ratio of 420% and a payback period of less than 3 months.

Opportunities for efficient operation are inextricably linked to good water management practices. Production of steam requires a very high energy intensity. Reducing blowdown, returning more condensate, boiler tube cleanliness, eliminating steam leaks and steam trap maintenance are all associated with significant energy saving potentials (individually often 2 – 8% energy savings).

IN RESIDENTIAL BUILDINGS

Wastewater heat recovery system (WWHR) is a simple and cost effective technology that recovers waste heat energy from the water in shower drains to again warm the incoming fresh water supply. The process can raise the temperature of freshwater from 10 to 30 C. If between 2022 and 2030 every second renovated or newly constructed building in Europe were equipped with the WWHR system, 35.7 TWh less energy would have to be generated and 6.6 Megatons of CO2e emissions less emitted. In theory, installing the system in all current buildings could triple that amount.[24]

This level of annual energy savings equals to 3.48 bcm of fossil gas saved per year, about 2.24% of the EU's 2021 imports from Russia.

24. The Potential of Wastewater Heat Recovery Systems in reducing the energy need for water heating in the EU in a cost efficient way. Study, University of Innsbruck, Passive House Institute, March 2022.

11

ACTIVATING DEMAND-SIDE FLEXIBILITY

Rapidly decreasing emissions requires an overhaul of a rigid energy system, too dependent on fossil fuels, to a system adapted for the smart integration of renewables. To achieve this transformation in a cost-effective manner, it requires that costumers are incentivised to flexibly adjust their energy consumption.

Demand-side flexibility (DSF) is the capacity of energy consumers to react to external signals and adjust their energy generation and consumption in a dynamic time -dependent way, individually as well as through aggregation. This can be provided by smart decentralised energy sources, including demand management, energy storage and distributed renewable generation to support a more reliable and efficient energy system.

A study commissioned by smartEn – Smart Energy Europe calculated the potential contribution that demand-side flexibility can have on the gas demand reduction, used for electricity production, for the years 2023 and 2025 in the EU27, including Norway, Switzerland and the UK. The results of the study indicate that a widespread activation of DSF in Europe could save up to 1.6% if total gas imports in 2023, generating monetary savings of €16 billion. In 2025, the potential savings are nearly double, amounting to 3.1% reduction compared to gas imports and equivalent to €31.4 billion saving. This is achieved mainly through load shedding, which contributes to shift demand from gas to other less expensive fuels, and reduces the curtailment of renewable generators. [25]

> **This level of annual energy savings equals to 11 bcm of fossil gas saved per year, about 7% of the EU's 2021 imports from Russia.**

25. DsF potential contribution to 2023 and 2025 gas reduction - Technical appendix, DNV, October 2022 2030

12 INTEGRATING EXCESS HEAT INTO THE ENERGY SYSTEM

Excess heat, also called waste heat, is produced by an engine due to fuel combustion or chemical reaction and is generally released to the environment while it can be reused.

Reusing excess heat is much cheaper than buying or producing energy for heating and it will lower overall energy demand and costs for consumers. Adding to this, excess heat can replace significant amounts of electricity or gas otherwise needed to produce heat, thus helping stabilize the future electricity grid and easing the transition to a green energy system.

In total, there is about 2,860 TWh/year of waste heat accessible in the EU. This corresponds almost to the EU's total energy demand for heat and hot water in residential and service sector buildings, which is approximately 3,180 TWh per year in the EU27+UK.

In the EU, industrial sites constitute the largest source of excess heat, with heavy industrial sites amounting to over 267 TWh a year. This is more than the combined heat generation of Germany, Poland and Sweden in 2021. Especially cement, chemicals and steel industries have big potential since they produce waste heat in high temperatures and account for a significant proportion of industrial energy demand.

> **This level of annual energy savings equals to 27.33 bcm of fossil gas saved per year, about 18% of the EU's 2021 imports from Russia.**

The excess heat produced by the industry can be reused to supply a factory with heat and warm water, but it also can be exported to neighbouring households and industries through a district energy system. Phasing out fossil fuels as district heat supplies and integrating renewable energy sources and waste heat to the system would contribute to decarbonization targets of the EU while saving energy.

Although their amount of waste heat is not as much as in the industry, data centres, subway stations, supermarkets, wastewater treatment plants and food production facilities also produce significant amounts of excess heat that is not reused today although the technologies to do so exist. The excess heat can be re-used for heating the space and providing hot water in the same unit or together these sectors can cover a considerable amount of energy consumption in urban areas. A study commissioned by Danfoss shows the amount of excess heat from these sources in the Greater London adds up to 9.5 TWh per year, which meets the amount of heat required for around 790,000 households.[26]

Beyond this, in the future new excess heat sources will emerge and generate large amounts of excess heat: projections show that a full implementation of excess heat has the potential to save EUR 67,4 bn a year in 2050.[27] These savings result from large fuel savings leveraged by interconnecting the heating and cooling sector with other parts of the energy system and more flexibility resulting in the better integration of renewable electricity sources in the wider system.[28]

26. The world's largest untapped resource: Excess heat, Danfoss, 2023
27. Heat Roadmap Europe 4: Quantifying the Impact of Low-Carbon Heating and Cooling Roadmaps, Aalborg University, 2018
28. Heat Roadmap Europe 4: Quantifying the Impact of Low-Carbon Heating and Cooling Roadmaps, Aalborg University, 2018

MEASURES ENHANCING THE REGULATORY AND POLICY FRAMEWORK

MEASURES 13-20

13 FAST TRACK THE REGULATORY AND POLICY-DEVELOPMENT OF THE FIT FOR 55 PACKAGE

In the ‘Fit for 55’ legislative package, the revision of the Energy Performance of Buildings Directive (EPBD) and the Energy Efficiency Directive (EED) must be given the highest priority. We recommend fast-tracking the adoption and implementation of these two Directives which have a clear, direct impact on the EU’s overall energy consumption.

EED REVISION

The correct implementation and application of the Energy Efficiency First principle is paramount to enable the transformation of the EU’s energy system. It is an enabler for triggering energy savings and reduction of energy demand at system level, leveraging demand-side flexibility, the optimal use of current infrastructure and the penetration of renewable energy sources, while minimising negative impacts for society and cutting costs and stranded assets. In addition to a binding and higher target on energy efficiency for 2030, the sub-targets foreseen by the EED should be increased. Consequently, the energy efficiency targets for the public sector, the annual Energy Savings Obligation and the objective of renovation of public buildings must be increased to reflect the current situation. While the EED focusses on the exemplary role of the public sector, it is paramount to ensure that the renovation target applies to all public buildings including at the central, regional and municipal level. Much remains to be done for the private building sector. The energy efficiency potential in the private non-residential sector cannot be overlooked, because of their similar energy consumption patterns with public buildings.

EPBD REVISION

The introduction of Minimum Energy Performance Standards (MEPS) is a major step forward in the EU’s energy framework to accelerate building renovations. However, the current proposal would only mandate renovations for the worst performing buildings, those with an energy class F and G to at least be transformed into an E energy class. This is a missed opportunity, as all of the EU’s building stock must become Zero Emissions by 2050, in line with the EU climate neutrality goal. To implement the Renovation Wave, MEPS should enter into force as of 31 December 2025 for public and private non-residential buildings, and as of 31 December 2027 for residential buildings. Importantly, to untap the benefits stemming from building renovations for its users, MEPS should mandate that class F and G buildings should strive to reach better levels of energy performance beyond the proposed energy class E. In addition, MEPS must cover all buildings, through a well-designed sequencing for the different building segments and establishing a clear roadmap. Many other good proposals in the EPBD revision can also be fast-tracked, like the introduction of renovation passports, or digital building logbooks.

Finally, better technical assistance, increasing the availability of one stop shops, and overall better administrative support for citizens and local administrations are essential measures to deliver of energy savings.

More recommendations on the EED and EPBD revisions are available in our position papers.[29]

29. Recommendations to shape the decade of building renovations, EU-ASE, 2021
& Making the EED “Fit for 55”, EU-ASE, 2021

14 ACCELERATE THE USE OF ENERGY AUDITS, ESPECIALLY FOR SMES

The IEA 10-points plan underlines the need to support small businesses to become more efficient to save energy and be protected from price volatility. Scaling Member States energy efficiency programmes, including energy audits, to 5% of SMEs would deliver immediate annual energy savings of 250 mcm. The use of energy audits should therefore be further supported, starting with mandating the application of the recommendations present in the latest audits.

15 TAP INTO THE UNEXPLOITED POTENTIAL OF THE WATER-ENERGY NEXUS

The European Institutions should strengthen policy and regulatory provisions to uncover areas with hidden potential for energy savings. For instance, strong interdependencies exist between water and energy (water-energy nexus). A smarter management of water would reduce the consumption of energy related to the production, treatment and transport of water across sectors including industrial cycles and municipalities

At the level of municipalities, waste water networks and treatment plants hold a great potential for energy savings, heat recovery, recycling, and producing energy from waste with little additional infrastructure investments.
Globally, the water utilities energy use equals to 101 coal-fired power plants and with existing technologies global utilities can cut 50% of their emissions. The global energy consumption of the water and wastewater sector amounts to 3.7% of the global electricity consumption.[30]

Realising the full energy saving potential of the water-energy nexus should be prioritised via the current revision of the Energy Efficiency Directive (EED), the Urban Waste Water Treatment Directive (UWWTD), the Energy Performance of Buildings Directive (EPBD) and the Industrial Emissions Directive (IED).

The digitalisation of the EU economy will only increase our reliance on data centres, which are large energy consumers. Electricity consumption of the global data centre industry reached 205 TWh in 2018 which is the equivalent of 1% of the world's electricity use. Data centre operators should be encouraged to reduce their environmental footprint by reducing their energy and water use by setting a minimum level of performance to comply with.

30. Powering the wastewater reinassance, 2015

16

REFOCUSING RECOVERY AND RESILIENCE PLANS AND COHESION POLICY PROGRAMMING

Recovery and Resilience Plans (RRPs) and Cohesion Policy programming post 2020 and other financial instruments should be refocused and steered to incentivise energy efficiency.

New investment in fossil-fuels based equipment or infrastructure should be banned from public funding regardless of their higher energy efficiency component to avoid future lock-in and increase EU energy independence from gas import. This should also apply for State Aid (GBER under revision and the CEEAG), which still keep the door open for state aid to fossil fuels.[31]

EU public funds should allocate sufficient resources (for example 10% of building renovation programmes) to technical assistance and capacity building. This budget shall be spent, for instance, on organising exchanges with local stakeholders to identify energy saving and heat recovery opportunities, put in place mission-oriented task force to aggregate energy efficiency projects, on putting; on reskilling and/or upskilling; on training workforce, form boilers to heat pumps installers.

Finally, learning from what has been done with the REACT-EU package to address the COVID-19 pandemic, existing and unspent cohesion policy funds for the period 2016-2020 should be reallocated to finance energy efficiency programmes aimed to create structural changes that reduce gas consumption in the short and in the long term.

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CONVENE A EUROPEAN ENERGY EFFICIENCY SUMMIT

Energy efficiency is the safest and most affordable way out of the energy and climate crisis. Recent events have shown how trends in electricity are following prices surges of fossil fuels. As a result, the only alternative Kwh that would guarantee energy security is the one we do not use. The EU should convene a high-level European summit gathering national and European decision-makers, academia, industry and civil society organisations to develop a comprehensive energy efficiency strategy for Europe.

31. See EU-ASE responses to the GBER and CEEAG consultations.

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ESTABLISH AN EU ENERGY EFFICIENCY TASK FORCE

Based on model of RECOVER, establish a Task Force bringing together experts from different Directorates General (ENER, RESEARCH, EMPL, GROW, REGIO, ENVI, RECOVER), European financial institutions and representatives of national Governments. The Task Force would ensure coordination of energy efficiency policies and monitoring of actions and their impact in terms of increase Europe energy security and reduction of gas import.

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PROVIDE ADEQUATE AND WELL-DESIGNED CUSHIONING FOR INCREASED ENERGY PRICES

The rising energy prices expose more and more citizens to energy poverty. Member states support should cushion the shock in a way that support individuals and companies in reducing their energy consumption. For instance: reduce VAT on energy-efficiency products and installation services; offer public transportation for free and incentives for electric car-sharing services and tax deduction for the purchase of bikes; allow companies to adopt flexible organisation structure, loosen up rules for allowing home-office and introduce flexible working hours to avoid peaks in traffic and optimise use and quality of public transportation services; remove incentives that are energy inefficient such as tax rebates on company cars.

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RAISE AWARENESS AND ENGAGE CITIZENS FOR INVESTING IN ENERGY EFFICIENCY MEASURES AND FOR COLLECTIVE BEHAVIOURAL CHANGE

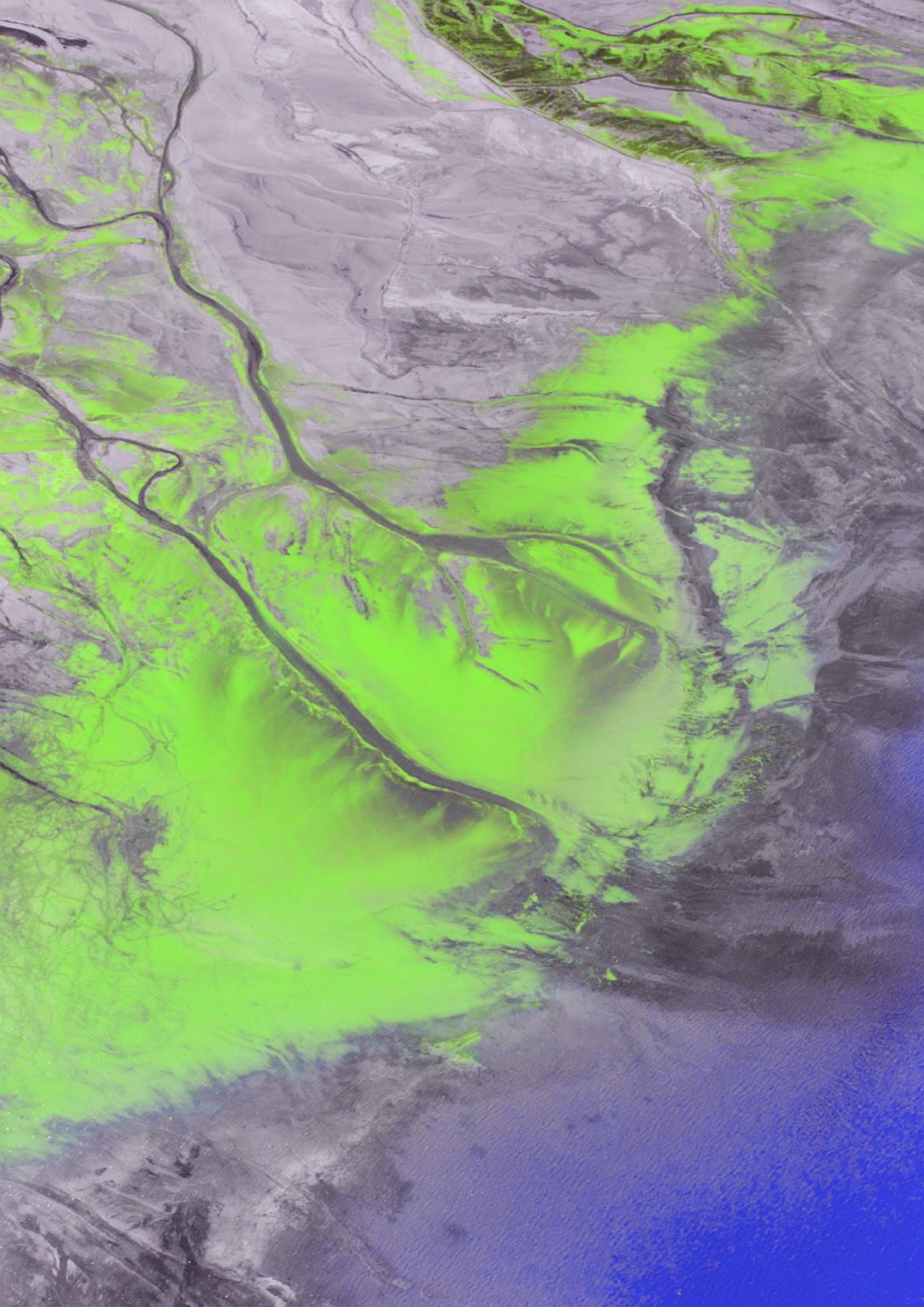
Governments must show leadership and commit to ambitious national objectives to reduce energy consumption, supported by attractive financial offer for households and the non-residential sector. In line with this approach, they should run communication campaigns calling on the population to adopt energy efficiency measures and habits. Campaigns should make the most of new social communications channels and should raise awareness amongst the population about their role in achieving such gains at individual and societal level. This could include the set-up of websites, apps and/or local information desks recommending using already available financing schemes to improve energy efficiency and concrete behavioural changes to reduce energy consumption, as well as the development of a live counter to display the actual progress (at EU and national level) in cutting energy (gas and oil) imports from Russia.

CLOSING REMARKS

The European Union's objective to phase out imports of fossil fuels from Russia well before 2030 is a difficult task. The EU is especially dependent from Russia on fossil gas supplied by pipeline flows, way ahead of other suppliers like Norway, North Africa or Azerbaijan.

However, through energy efficiency solutions, the European Union could not only phase out all imports of fossil gas coming from Russia, but almost phase out all imports from third countries flowing through pipelines. The aggregation of the energy savings potential of the non-exhaustive list of measures included in this catalogue shows that the EU could become independent from Russian gas. When compared to the 155 bcm imported from Russia in 2021, accelerating energy efficiency measures would be a turbocharger for the EU to achieve energy independency from Russia.

This is why we call the European Union and Members States to promote and implement the Energy Efficiency First principle across all sectors. All public policies and energy investments should avoid locking resources in stranded assets and systematically prioritise energy demand reduction and optimisation of energy consumption when technically feasible and cost-effective.



The European Alliance to Save Energy (EU-ASE) aims to advance the energy efficiency agenda in Europe. The Alliance allows some of the world's leading multinational companies to join environmental campaigners and a crossparty group of Members of the European Parliament.

EU-ASE business members have operations across the 27 Member States of the European Union, employ over 340.000 people in Europe and have an aggregated annual turnover of €115 billion.

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