

Energy Efficiency Policy Toolkit 2023

From Sønderborg to Versailles

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Introduction

Energy efficiency is central to improving the lives of all people by providing affordable and reliable energy access, supporting economic growth and resilience, enhancing security of supply and accelerating clean energy transitions. A strong, early focus on energy efficiency is essential for delivering a net zero energy system by 2050.

To continue its support for stronger action on efficiency, the IEA has developed and updated its policy toolkit for governments on the occasion of the 8th Annual Global Conference on Energy Efficiency, in Versailles, co-hosted by the IEA Executive Director, Dr. Fatih Birol, and French Minister for Energy Transition, Her Excellency Agnès Pannier-Runacher. The toolkit was first launched at the IEA's 7th Annual Global Conference on Energy Efficiency in Sønderborg. It provides a practical approach to accelerate action on energy efficiency by guiding governments in the design of effective policy measures, the support of policy decisions and the delivery of policy actions.

The toolkit comprises two parts: The first is ten strategic principles, based on the recommendations of the Global Commission for Urgent Action on Energy Efficiency, that bring together key learnings from global experience on how to maximise the impact of all energy efficiency policies and programmes. The second is a set of sectoral policy packages that highlight key policies available to governments, and how they can be integrated into an effective coherent suite of policies and actions to deliver faster and stronger efficiency gains. The 2023 policy toolkit includes two new policy packages on clean cooking and finance as well as updates to the existing packages.

The policy packages present a practical approach to policy design and implementation built on three essential elements: Regulation, information and incentives. They highlight how to most effectively combine different measures into a strategic approach.

Implementing Energy Efficiency via Strategic Principles and an effective coordinated Policy Packages Toolkit

Ten Strategic Principles

Based on IEA analysis of best practices and the work of the Global Commission for Urgent Action on Energy Efficiency¹ the following ten strategic principles can help guide policy makers to enhance and expand their energy efficiency policies and programmes, and to quickly accelerate energy efficiency gains through new and stronger policy actions.

1. Prioritise cross-cutting energy efficiency action for its economic, social and environmental benefits

An all-of-government approach, prioritising cross cutting action, will maximise energy efficiency gains throughout all sectors of society, enhance social and economic development, energy security and resilience, and accelerate decarbonisation of the energy sector.

2. Act to unlock efficiency's job creation potential

Energy efficiency can quickly deliver job growth and can continue to be a long-term, sustainable employment sector. Capacity building and skills development are essential for effective policy implementation.

3. Create greater demand for energy efficiency solutions

Efficiency action will be most rapidly scaled up through a focus on increasing demand for efficient products and services and enabling greater levels of market activity.

4. Focus on finance in the wider context of scaling up action

Mobilising finance and creating market conditions to attract and increase private sector investment is an essential element of efficiency action. Policies aiming to do so will be most effective if they are part of a broad coherent approach to driving market scale, combining measures to increase demand with actions to remove investment barriers.

5. Leverage digital innovation to enhance system-wide efficiency

Policymakers can take advantage of the potential of digital innovation to enable smart control, better energy management and wider energy system optimisation. Policies can enable and incentivise new solutions while also protecting consumers and system security.

6. The public sector should lead by example

Government investment to drive innovation and higher standards in the public sector will build experience, markets, knowledge and confidence in energy efficiency solutions.

7. Engage all parts of society

Implementation of energy efficiency action needs to happen at all levels of society, with cities, businesses, and local communities all playing an important role in its success.

8. Leverage behavioural insights for more effective policy

People are at the centre of energy efficiency action, benefitting from greater access, lower costs and more comfortable, healthier environments. Consumer behaviour plays an important role and insights from behavioural science can help design smarter, more effective policies.

9. Strengthen international collaboration

International collaboration and exchange of best practice allow countries to learn from each other and harmonise approaches and standards where appropriate. This can speed up implementation of energy efficiency policies and transformation of markets.

10. Raise global energy efficiency ambition

Benefits from energy efficiency policies are greatest when the ambition is high, capturing the significant untapped potential to deliver economic, energy and environmental benefits.

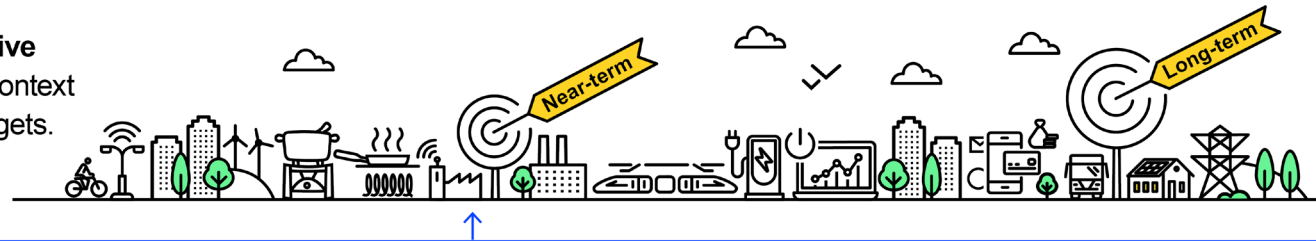
¹ The Global Commission for Urgent Action on Energy Efficiency was established in June 2019 by the Executive Director of the IEA and was chaired by the Prime Minister of Ireland, Mr Leo Varadkar. The Commission's 23 members included national leaders, energy ministers, top business executives and global thought leaders, who worked together to identify global best practice and agree ten key strategic recommendations, which were published at the IEA's 5th Annual Global Conference on Energy Efficiency in 2020.

Policy Packages for Energy Efficiency

In all sectors the greatest efficiency gains are achieved by a package of policies that combine three main types of mechanisms: **Regulation**, **information** and **incentives**. Careful design and implementation will deliver efficiency's full potential to enhance energy security, create jobs, increase living standards, cut energy bills and reduce emissions.

Targets

Policies are more effective when they are set in the context of clear strategies and targets.

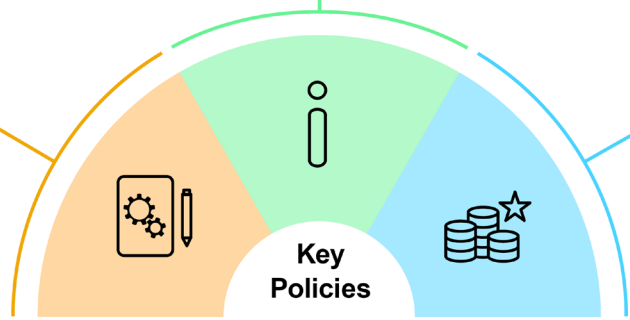


Essential elements

Regulation is essential to exclude the worst performing equipment and practices from the market, to drive average efficiency levels up, and to set rules for measurement of performance.

Information helps people make more efficient choices in what they buy and how they use energy.

Incentives make efficient options more attractive and speed up the upgrade and replacement of appliances, buildings and vehicles. They also encourage the use of new technologies and practices.



Implementation is as important as policy design.

Ensuring that the **resources** are in place to put policies into action.

Address **vital elements** such as capacity building, enforcement, monitoring.

It is important to continually assess **policies and programmes** so as to keep up to date with technology developments.

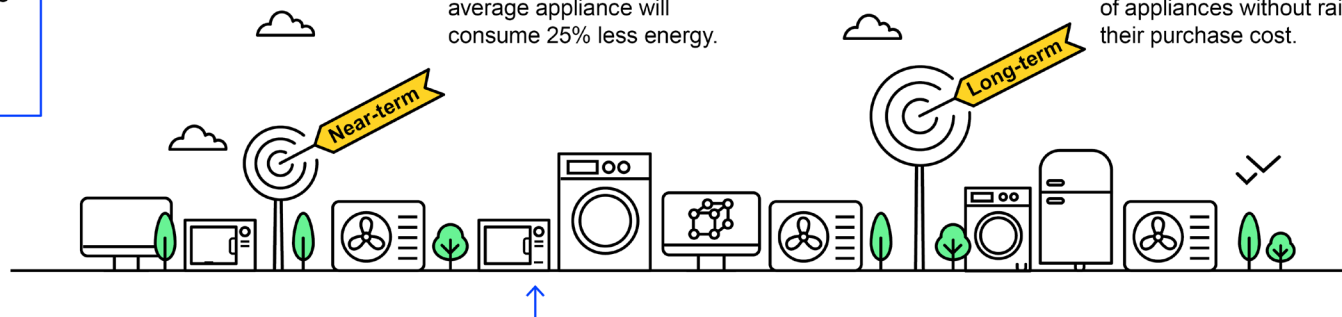
Policy Package – Appliance Energy Efficiency

Immediate opportunities

In most cases, it is possible to buy appliances that are twice as efficient as those typically purchased.

In the IEA Net Zero Scenario milestone for 2030 the average appliance will consume 25% less energy.

Long-term appliance policies can halve the consumption of appliances without raising their purchase cost.



REGULATION

- **Minimum Energy Performance Standards** exclude the least efficient products from the market; they should be in line with international best practice, while reflecting local circumstances; and be regularly updated. Regulations are essential for moving the market towards the best available technology in line with achieving net zero targets.
- **Regulation** can ensure that new appliances are demand response ready in order to offer flexibility to the end-user and the overall system, and reduce peak demand.
- **Regulating the import and performance of used appliances** can help avoid inefficient appliances entering the market.



INFORMATION

- **Comparative labels** help consumers, to identify the most efficient appliances and encourage purchases based on life time costs. Ensuring labels are appropriately displayed is also key.
- **High Efficiency Performance Specifications** identify the best performing products and are often used as the basis for labels and incentives.
- **Education and capacity building** encourage industry and retailers to produce and supply more efficient products.
- **Consumer information campaigns** help people make informed decisions. These are most effective when based on behavioural insights and targeted strategies.



INCENTIVES

- **Rebates, grants and other financial offers** motivate consumers to buy highly efficient appliances. These could come directly from governments or schemes such as energy efficiency obligations.
- **Finance or taxation measures** on sales and imports can encourage manufacturers to produce appliances that are more efficient.
- **Dynamic electricity pricing** helps incentivise flexible demand.
- **Product lists** help companies and households identify efficient products which are eligible for loans, tax reductions, or other financial incentives.
- **Awards** promote the most efficient appliances and equipment.

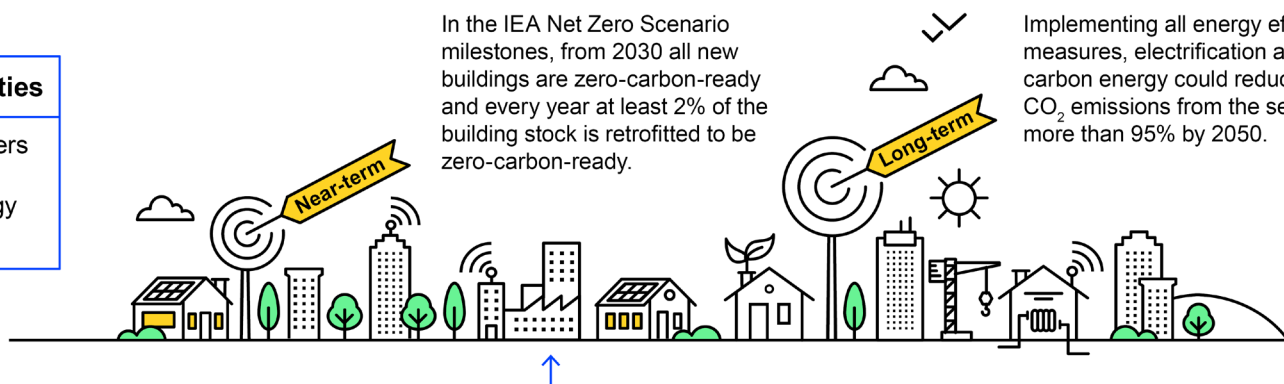
Policy Package – Buildings Energy Efficiency

Immediate opportunities

Replacing fossil fuel boilers with high efficiency heat pumps can reduce energy use by up to 75%.

In the IEA Net Zero Scenario milestones, from 2030 all new buildings are zero-carbon-ready and every year at least 2% of the building stock is retrofitted to be zero-carbon-ready.

Implementing all energy efficient measures, electrification and low-carbon energy could reduce total CO₂ emissions from the sector by more than 95% by 2050.



REGULATION

- **Targets for energy efficiency** in buildings, including for renovation rates, fosters market growth and facilitates long-term investment decisions.
- **Building energy codes** for new and existing buildings are essential to accelerate the transition to zero-carbon-ready buildings. It is important that they are regularly updated to increase coverage and stringency.
- **Minimum energy efficiency requirements** for existing buildings help guarantee performance and accelerate the process of renovation through instruments such as the standardisation of processes.
- **Regulations** can ensure that buildings are equipped with smart interactive technologies and can become demand response ready.



INFORMATION

- **Information on building performance** allows consumers to identify the most efficient options when buying or renovating buildings. Examples include energy performance certificates, disclosure programmes, one-stop shops for upgrades and renovation passports.
- **Smart interactive technologies** can show real-time energy performance, help adjust occupants' behaviour and optimise energy use based on signals from the grid.
- **Training and education programmes** for building sector workers are important to ensure a suitably skilled work force.
- **Public awareness campaigns** designed to include behavioural insights encourage low-cost actions, such as thermostat adjustment and use of smart technologies.



INCENTIVES

- **Financial incentives** such as green mortgages, energy performance-based preferential loans and tax rebates and grants can motivate consumers and developers to increase investment in energy efficient solutions.
- **Expedited administrative procedures**, including accelerated permitting, targeted at high performing new build or retrofit projects, encourage the implementation of energy efficient measures.
- **Award and recognition programmes** encourage the development of highly energy efficient buildings.

Policy Package – Industry Energy Efficiency

Immediate opportunities

Implementing better energy management practices has been shown to deliver savings up to 15% in the first 1-2 years, with little or no capital investment.



REGULATION

- **Minimum Energy Performance Standards** for key equipment, such as motors and pumps, can drive up overall industrial efficiency levels.
- **Regulation** extends beyond technology to target areas such as research and development, energy auditing, mandatory consumption reporting, energy management systems, and upskilling of the workforce. Incorporating life cycle impacts into regulation helps promote material efficient choices at the design stage.
- **Regulatory Instruments** yield best results when rooted in a good understanding of local context and include ambitious, regularly updated, standards.
- **Regulations to ensure demand side response capabilities** help provide flexibility to the grid.



INFORMATION

- **Benchmarking, indicators and other forms of detailed data** allow governments to track the progress of policies and allow industries to compare their energy performance with that of their peers.
- **Digital technologies** enable industries to track energy use in real time and help ensure flexible demand side response, resulting in energy optimisation and cost saving opportunities.
- **Sharing information on energy efficiency best practice** through targeted information and industry networking activities helps industries raise ambition and improve energy performance.



INCENTIVES

- **Incentives** such as preferential finance, links to carbon trading, obligations and tax based measures can motivate crucial energy efficient decisions at the process design and equipment selection stage, supporting industry transition to near zero emission technologies.
- **Free or subsidised energy audits**, often targeted at SMEs and other sectors of strategic importance, can help rapidly increase energy efficiency.
- **Policies to foster Energy Service Companies** provide industry with access to significant external energy expertise and attractive structured financial packages.
- **Incentives for the reuse and recycling** of materials reduce the need for higher-emission primary materials production.

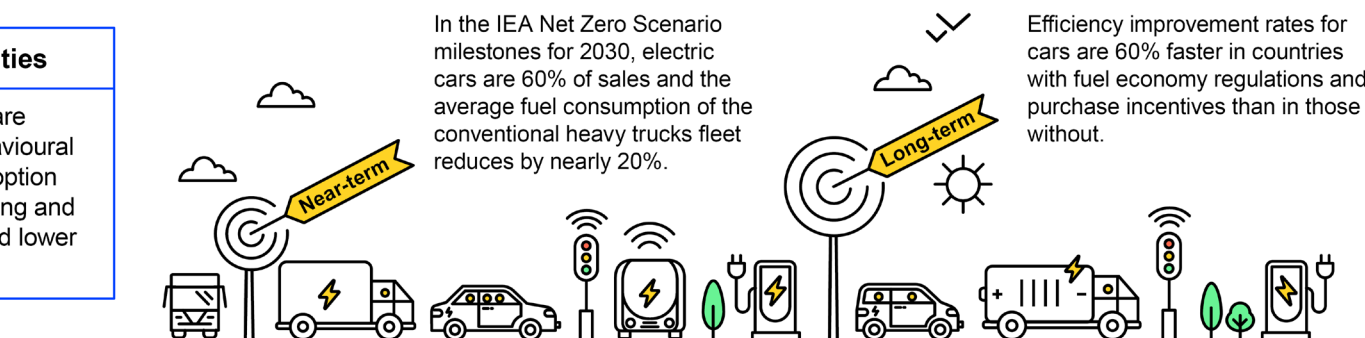
Policy Package – Vehicle Energy efficiency

Immediate opportunities

Significant fuel savings are achievable through behavioural actions including the adoption of best practices for driving and vehicle maintenance, and lower speeds.

In the IEA Net Zero Scenario milestones for 2030, electric cars are 60% of sales and the average fuel consumption of the conventional heavy trucks fleet reduces by nearly 20%.

Efficiency improvement rates for cars are 60% faster in countries with fuel economy regulations and purchase incentives than in those without.



REGULATION

- **Vehicle fuel economy standards** result in greatly reduced fuel use provided they are kept up to date, well monitored and properly enforced.
- **Regulating the import and export of used vehicles** can help improve fleet fuel economy and ensure road safety and air quality benefits.
- **Regulatory and market signals**, such as through stringent standards and target setting, help bring electric vehicles to the market, by providing an impetus to manufacturers to develop these technologies.
- **Regulation** can also help ensure the required infrastructure, for example standardised charging, is in place.



INFORMATION

- **Information campaigns** on carsharing practices and more fuel-efficient driving help people take informed action relating to energy and cost savings. Campaigns are more effective when based on behavioural insights and targeted strategies.
- **Labels inform consumers**, identifying the most efficient vehicles allowing people to choose vehicles that cost less to run. Labels for new and used vehicles help ensure benefits for all vehicle purchasers.



INCENTIVES

- **Incentives** can make vehicle costs cheaper at point of purchase, such as through grants or lower registration fees. They can also reduce on-going costs, through for example free parking and exemptions from congestion tolls.
- **Government grants** for strategic charging infrastructure, such as charging stations in homes and workplaces or fast charging along expressways, encourage the adoption of electric vehicles reflecting that purchase decisions are influenced by the availability of infrastructure.
- **Such incentives** facilitate the early adoption of electric vehicles and can be phased out as uptake grows.
- **Vehicle taxation and duties**, can be structured to incentivise the purchase of more efficient vehicles.

Policy Package – Energy Efficient Cities

National policy makers play an important role in accelerating urban energy transitions. Cities connect directly with communities and people to enhance implementation and better inform policy. National and city-level alignment in energy efficiency policy is a key dimension of clean energy transitions. Energy Efficient cities can use digital tools to make smarter, better-informed decisions and improve quality of life for all.



REGULATION

- **National Governments help create the environment** for cities to take action through setting an overall vision including plans and targets.
- **Local regulations and codes** incorporating solutions such as smart data and metering help unlock system wide efficiencies.
- **Planning** should be integrated and cross sectoral, taking a long term view.
- **International standards and benchmarks** are important in enabling seamless communication across technologies and applications, critical for efficient urban energy systems.
- **National action that facilitates business models** for clean urban energy services, such as Public Private Partnerships and ESCOs, unlock new sources of finance.



INFORMATION

- **National initiatives can be used to build energy efficiency capacity in cities** through creating training opportunities and partnerships, informed by international best practice.
- **Digitalisation creates new sources of data** e.g. on air quality, energy consumption and traffic. Analysis and communication of this data can improve the operation of urban energy systems.
- **Digital solutions for energy efficiency in cities**, require open, transparent access to data, with privacy protected. National governments can facilitate by developing guidelines and mechanisms to enable data use and sharing across sectors and levels of government.
- **Sharing information on energy efficiency best practice** and proven cost effective technologies can help cities better understand and implement efficiency opportunities to improve performance.



INCENTIVES

- **Investing in city level action and enabling funding to flow** from national to local level, through targeted funding models, can give the best return on investment and accelerate inclusive clean energy transitions.
- **National governments can use their influence to leverage international programmes** aimed at cities, for example by creating innovation areas to attract digital and clean energy technology talent.
- **Seed funding and complementary finance from national government**, can mobilise and help scale up private capital for investment in energy efficient cities.
- **Green procurement** for example through the incorporation of energy efficiency performance criteria into municipal tenders, mobilises the purchase power of public bodies, acting as a major driver for market deployment of efficient products.

Policy Package – Clean Efficient Cooking

Immediate opportunities

A successful strategy to achieve clean cooking goals needs to consider all available technologies and fuels.

For rural communities, replacing traditional stoves with improved solid fuel stoves is an important first step to better population health.

In the IEA Net Zero Scenario universal access to clean cooking is achieved by 2030. This can reduce GHG emissions by 870 CO₂-eq equivalent to double Brazil's total annual CO₂-eq emissions from energy today.

Globally long term policies prioritise electrical cooking appliances to reach climate goals. By 2050 reduced indoor air pollution due to clean cooking will result in 2.3 million fewer premature deaths per year.



REGULATION

- **Strong government regulation** of energy markets can help ensure clean energy supplies are available for consumers.
- **Minimum Energy Performance Standards** for clean cooking stoves and other cooking equipment remove the least efficient products from the market.
- **Targeted subsidies for the most vulnerable consumers** can help ensure equal access to clean cooking, such as efficient LPG or electric cooking.
- **Building codes and obligations on landlords** can ensure adequate ventilation and other health and safety requirements are met.



INFORMATION

- **Consumer information campaigns** help people make more informed decisions. They are most effective when based on behavioural insights and targeted strategies.
- **Local information provision** through field offices in rural areas and advisory centres can improve the standing of programmes among the local population.
- **Demonstrations** highlighting traditional dishes successfully cooked using new technologies can help transform perceptions.
- **Labelling and certification** help consumers to identify the most energy-efficient clean cooking technologies. This can create a market for efficient technologies and provides motivation for manufacturers to improve the efficiency of their products.



INCENTIVES

- **Measures such as rebates, grants and tax reductions** motivate consumers to choose efficient clean cooking appliances.
- **Appliance replacement programmes** encourage households to replace their old, inefficient cooking stoves with more efficient models including induction stoves.
- **Clean cooking initiatives** can be included in carbon credit and offset schemes.
- **Restructuring energy tariffs**, including those for electricity, to include provisions favouring clean cooking can incentivise consumers to switch from traditional biomass and other fossil fuels.

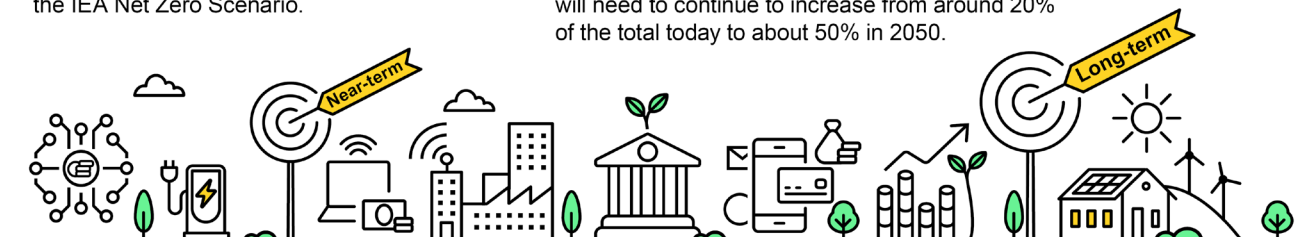
Policy Package – Financing Energy Efficiency

Immediate opportunities

Growth in energy efficiency investment is lower than it needs to be, but enacting the right policies delivers social and economic benefits promptly, such as doubling the number of energy efficiency related jobs by 2030.

Stronger policy action can facilitate a tripling of energy efficiency-related investment to almost 1.8 trillion USD per year by 2030 in the IEA Net Zero Scenario.

Reaching net zero emissions requires an unprecedented acceleration in action. The share of total energy investment related to energy efficiency will need to continue to increase from around 20% of the total today to about 50% in 2050.



REGULATION

- **Long term strategies, targets and planning** emphasise government commitments to sustained change, attracting private investment.
- **Energy market structures** can facilitate the participation of private actors, including energy service providers, supporting investment over time.
- **Strong policy and governance frameworks** including transparency regulations, Minimum Energy Performance Standards and ESG (Environmental, Social and Governance) requirements, can attract international investment and ensure long term flow of capital.
- **Utility regulation** can spur investment and enable innovative financing approaches e.g. where outlay is recouped through energy bills.



INFORMATION

- **Training programmes and technical assistance** for financial institutions and project developers help improve understanding of business models, risks and opportunities.
- **Policies and digital tools** enhancing data availability and quality, including energy performance certificates, help to improve financiers' understanding, and to verify energy savings and payback periods.
- **Development of standardised contract templates and terms** help create trust, reduce transaction costs and simplify replication.
- **Dedicated information campaigns** raise awareness of preferential funding opportunities, and how to access them.



INCENTIVES

- **Streamlined and digitised administrative processes** for energy efficiency projects, including permits, licenses or subsidies and one-stop shops reduce barriers to investment.
- **Public funding** can support de-risking mechanisms, like guarantee funds or risk-sharing facilities, helping to attract private capital.
- **Coordination platforms** and matchmaking services between project developers and private investors can improve access to funding.
- **Policies promoting innovative mechanisms** such as bulk procurement, on-bill financing and leasing models can achieve scale and amplify actions.
- **Energy subsidy reform** helps phase-out poorly targeted fossil fuel subsidies while boosting direct support for energy efficiency measures, including for vulnerable groups.

International Energy Agency (IEA)

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