Economic and Social Commission for Western Asia

Factsheet: Toolkit for Energy Efficiency Financing Instruments for Buildings in the Arab Region

Factsheet

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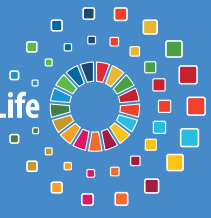

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Committed to the 2030 Agenda, ESCWA's passionate team produces innovative knowledge, fosters regional consensus and delivers transformational policy advice. Together, we work for a sustainable future for all.

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PARTNERSHIP

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AUTHORSHIP

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REVIEW AND CONSULTATION

The public consultation and peer review processes were coordinated by ESCWA and included the expert workshop on "Financing the Upscaling of Building Energy Efficiency Programmes for Climate Change Mitigation and Sustainable Development in the Arab Region", organized by ESCWA in Beirut in December 2020. Substantive comments and inputs were provided by international experts from regional and international organizations as follows: Mr. Scott Foster, Director of Sustainable Energy Division, Economic Commission for Europe (ECE); Mr. Ashok Sarkar, Senior Energy Specialist, Energy and Extractives Global Practice, The World Bank; Ms. Helen Naser, Advisor, Programme for Energy Efficiency in Buildings (PEEB), Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ); Mr. Nicholas Howarth, Research Fellow III, Climate and Environment Programme, King Abdullah Petroleum Studies and Research Center (KAPSARC); Mr. Rafik Missaoui, Sustainable Energy Economist, Chief Executive Officer, Alcor; and Ms. Kawther Lihidheb, Senior Energy Efficiency Specialist, ECONOLER.

EXECUTIVE SUMMARY

Improving energy efficiency, particularly within the building sector, is recognized as a major contributor to climate change mitigation and an area where current efforts must be increased. Improving energy efficiency is in line with Sustainable Development Goal (SDG) 7, "Ensure access to affordable, reliable, sustainable and modern energy for all", and in particular target 7.3, "By 2030, double the global rate of improvement in energy efficiency", but also target 7.1, "By 2030, ensure universal access to affordable, reliable and modern energy services", since scaling up energy efficiency in the building sector will free up energy resources that can be used to extend services to other potential end users. Furthermore, scaling up energy efficiency in the residential sector can enable access to additional energy services by vulnerable segments of society and reduce the risk of energy vulnerability.

There are a number of barriers to investing in building energy efficiency which are universal, barriers specific to the building sector and those specific to the region, which need to be addressed in the design of any energy efficiency financing instrument.

A major lesson from international experience is that an integrated approach to the design of financial instruments is required. Policy instruments can encourage the demand for energy efficiency projects and programmes that can utilize the various financing mechanisms that are available, including purpose-designed energy efficiency financial instruments, but the specific problem of bridging the gap between potential projects and fully developed, bankable projects must be addressed. Failure to do so risks creating financing instruments with insufficient deal flow for the available financing. Bridging the development gap can be addressed by a variety of transaction enablers, including procurement frameworks, providing project development assistance in the form of both finance and skills, and Super ESCOs.

This fact sheet is based on the toolkit for Energy Efficiency Financing Instruments for Buildings in the Arab Region, and attempts to capture the main outcomes derived from the toolkit.

MAIN OUTCOMES

- The demand for energy efficiency projects can be influenced by energy prices, energy efficiency policy instruments, consumer tastes and attitudes, capacity to develop projects inherent in the sector and the existence of transaction enablers such as procurement frameworks.
- Energy efficiency financing instruments need to be directly linked to energy efficiency policy implementation instruments leading to a pipeline of investments that need to be financed.
- In order to increase the flow of capital into energy efficiency it is necessary to increase the following: (a) the volume of projects being developed; (b) the capacity to develop, transact and finance projects; and (c) the volume of capital made available for energy efficiency.
- It is necessary to scale up private-sector investment with public capital used to catalyse, or crowd in investment.
- In practice, investing in energy efficiency, like any other investment, carries various types of risk, namely: Execution, Performance, Regulatory and Credit, placing importance on the use of derisking tools that reduce risks for the capital provider and potentially for the customer.
- To increase investment flows into energy efficiency, there is a need in all markets to increase communication between energy efficiency professionals and finance professionals.

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SCALING UP BUILDING ENERGY EFFICIENCY FINANCING IN THE ARAB REGION

The Arab region has historically had low levels of energy efficiency, with high levels of energy use per capita, partly because of fossil fuel and electricity subsidies. Population and economic growth will further increase energy demand over the coming years. Over the last few years, energy markets have opened up for private-sector investment, and fossil fuel and electricity subsidies have been reduced across the region, leading to increased costs for consumers and industry.

These changes have improved the case for energy efficiency for the consumer and have brought many benefits to the electricity system and society as a whole, including lower levels of air pollution, reduced need for capital expenditure in the electricity system, reduced need to import fuels, and increased energy system and economic resilience.

The Arab region is not on track with global energy efficiency targets. Regional intensity has only declined by about 3 per cent over the six-year period to 2016. Thus, the Arab region needs to reach a regional, aggregate, average annual improvement of 3.4 per cent compound annual growth rate (CAGR) in order to meet the global 2030 target. To achieve such an increase in the average annual improvement of energy efficiency, it will be necessary to significantly increase the level of investment going into energy efficiency.

Within the Arab region, there is a high need and growing demand for cooling services as economies and populations grow, as well as increasing average temperatures resulting from climate change. If this growing demand is met simply by conventional means such as standard air conditioning technologies, this will lead to significant increases in power demand.

An assessment by the United Nations Economic and Social Commission for Western Asia (ESCWA) from the year 2018[1] reported that, in 2015, 28 per cent of total primary energy supply in the Arab region was used for buildings, amounting to 21 per cent of total final energy consumption.

1 ESCWA, 2018. Report on Addressing Energy Sustainability Issues in the Buildings Sector in the Arab Region available at https://www.unescwa.org/publications/addressing-energy-sustainability-issues-buildings-sectori-arab-region.

BARRIERS TO FINANCING ENERGY EFFICIENCY IN BUILDINGS

Financing energy efficiency generally has a number of barriers. These are exacerbated by lack of capacity in the following three areas: energy consumers' ability to understand and make decisions about energy efficiency upgrades; the supply chain needed to design, develop and deliver building energy efficiency projects at scale; and the ability of financial institutions to originate, value and risk- assess energy efficiency projects.

Although subsidies have been reduced, energy prices (fuel and electricity) remain low, which means that incentives to invest in improving energy efficiency are weak. Even when regulations exist, compliance mechanisms can be patchy due to lack of existing institutional capacity, capacity-building and enforcement of regulations.

In lower-middle-income Arab countries and the Arab LDCs, information about energy saving and access to financial markets is almost non-existent, and priority is often given to increasing energy access, without consideration of how to address efficiency, access and the need for clean energy altogether.

Structures with monopolistic, State-owned utilities with bundled generation, transmission, distribution, and retail sales hinder investment in energy efficiency. The lack of competition also means that energy suppliers are not driven to differentiate through the provision of energy services such as energy efficiency upgrades. Finally, conflict zones continue to hamper initiatives towards energy efficiency, amongst others.

Box 1. Specific barriers to financing building energy efficiency projects

- **Project size:** Typical projects tend to be small by the standards of capital providers and have high transaction costs relative to the amount of capital deployed. There is a need to aggregate multiple projects, which requires a high degree of standardization to deploy significant amounts of capital.
- **Lack of a revenue stream:** Unlike with energy generation projects, the output is not energy production which can be metred and then monetized, but energy savings which are counterfactual. This makes ring-fencing benefits difficult.
- **The performance gap:** It refers to the difference between the designed results and the actual results. This gap can occur due to several reasons, some of which are outside the developer's control, such as weather conditions, and others which can be controlled or influenced, for instance, by using international standards for project design and development.
- **Split incentives:** In rented buildings, the tenant typically pays the energy bills. The landlord has no incentive to install energy efficiency measures as not he will see the benefits, but the tenant.
- **Distributed decision-making:** In the case of condominium apartments, local regulations require every tenant to agree to energy efficiency measures that impact the whole building. This can make getting approval difficult.
- **Low energy costs:** The financial benefits of energy efficiency come from saved expenditure on energy, and low energy costs, due to energy subsidies, reduce the savings, thus affecting the financial attractiveness of energy saving projects.

2 ENERGY EFFICIENCY POLICY IMPLEMENTATION INSTRUMENTS FOR THE ARAB REGION AND THE ROLE OF FINANCING INSTRUMENTS

A. ENERGY EFFICIENCY POLICY INSTRUMENTS FOR THE ARAB REGION

Auction systems for energy efficiency include two main mechanisms. Competitive tenders whereby the lowest priced bid wins; and within a framework that sets the price for each unit of energy savings and invites market actors to submit proposals for generating savings at a given unitary price.

Mandatory energy efficiency targets for specific sectors are one of the energy efficiency instruments that can be applied to translate the national targets into local and sectoral targets.

Utility-managed energy efficiency programmes require regulations that mandate electricity distributers or retailers to reduce the energy consumption of their customers by supporting the implementation of energy efficiency measures. Targets can be mandatory or voluntary.

Energy efficiency networks (EENs) with voluntary goals. EENs are platforms and mechanisms that bring energy consumers together to share experiences, collaborate on increasing their energy efficiency knowhow and undertake joint steps to improve efficiency.

Dynamic electricity pricing can establish a link between the retail price of electricity and the marginal costs of producing electricity. Approaches can use time of use, critical peak pricing or real-time pricing. Dynamic pricing passes onto the customer more of the real cost of using electricity on a time basis.

Mechanism for accelerating replacement of the stock of energy using equipment and appliances. This accelerates market penetration of products that are above the standard requirements and prepares the market for increased future mandatory requirements.

Energy savings insurance mechanisms of an energy performance contract. The insurance provides assurance to investors that they will achieve their targeted returns and passes the performance risk to the insurance provider.

Voluntary agreement is defined by the IEA as: "a contract or negotiated targets with commitments and time schedules on the part of all participating parties",[2] that could include actions to improve energy efficiency or reduce greenhouse gas (GHG) emissions.

Energy efficiency tax-based instrument encourages practices and/or investments that improve energy efficiency. The incentive can take the form of a tax credit or a rebate.

Super ESCO is an entity designed to grow the market for energy efficiency investments, usually using the energy performance contract (EPC) approach. Super ESCOs can take different forms. Leading examples in the Arab region include the Etihad Super ESCO and Tarshid, who aggregate demand, carry out development work, procure project implementation from private-sector ESCOs, source investment finance and work to build capacity amongst stakeholders.

2 IEA, 1997. Voluntary Actions for Energy-Related CO2 Abatement.

Table 1. Overview of energy efficiency policy instruments in the Arab region

INSTRUMENT	PRESENCE IN THE REGION	SIMPLICITY OF IMPLEMENTATION	TRANSFERABILITY AND REPLICABILITY	CAPACITY OF MARKET TRANSFORMATION
Auction systems for EE	Practically non-existent	Some barriers	Rather easily transferable	Rather large capacity
Mandatory EE targets	Practically non-existent	Rather easy to put in place	Easily transferable	Rather large capacity
Utility-managed EE programmes	Practically non-existent	Rather complex to put in place	Some barriers	Rather large capacity
EE network with voluntary goals	Only few examples	Rather easy to put in place	Rather easily transferable	Medium capacity
DSM electricity pricing or dynamic electricity prices	Only few examples	Rather complex to put in place	Rather context-specific circumstances	Rather large capacity
Mechanism for accelerating replacement of the stock of energy using equipment and appliances	Only few examples	Some barriers	Some barriers	Rather large capacity
Energy savings insurance mechanism of an energy performance contract	Practically non-existent	Some barriers	Rather easily transferable	Medium capacity
Voluntary agreement	In some countries	Some barriers	Rather easily transferable	Medium capacity
EE tax based instrument	Practically non-existent	Some barriers	Rather context-specific circumstances	Rather large capacity
Super ESCO	In some countries	Some barriers	Rather easily transferable	Rather large capacity

Source: GIZ, 2020. Innovative Energy Efficiency Instruments for the MENA Region.

B. THE LINK BETWEEN POLICY INSTRUMENTS AND FINANCING INSTRUMENTS

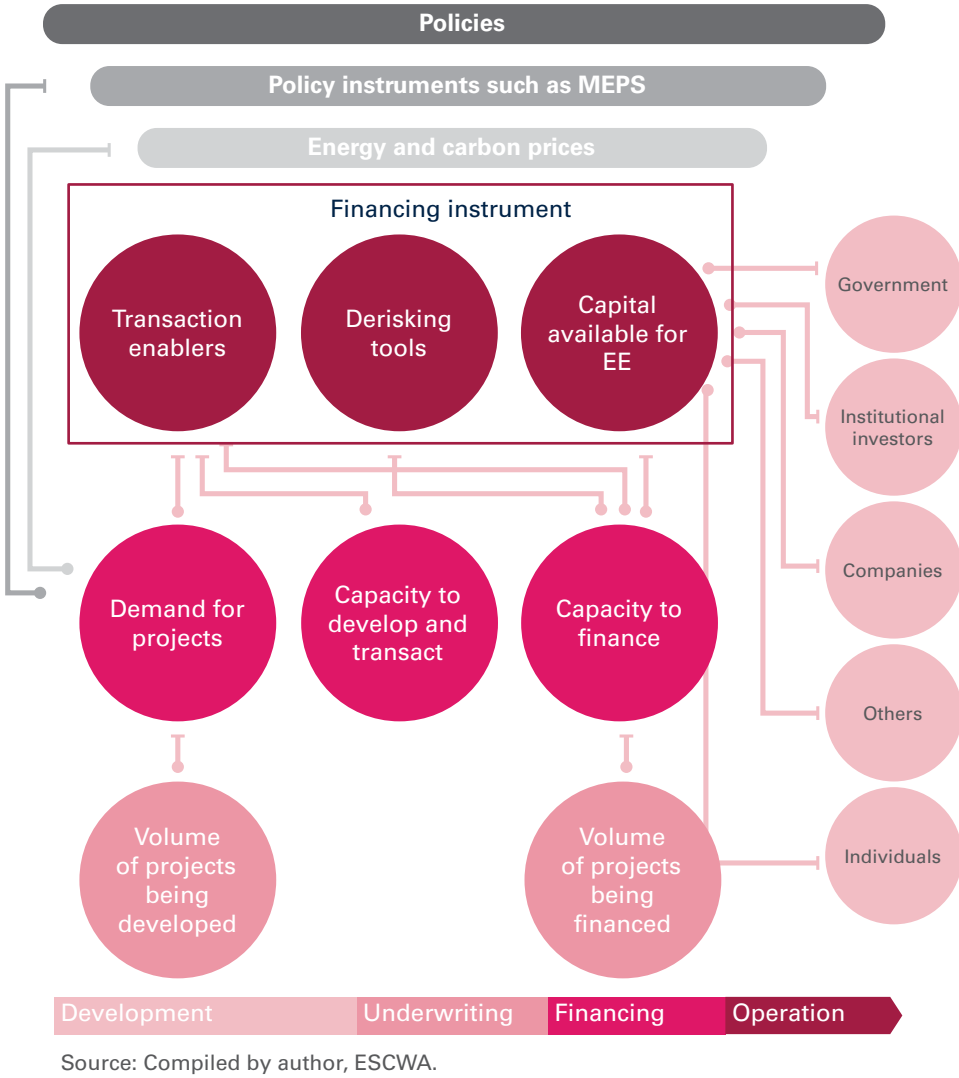
- Provide capital specifically allocated to energy efficiency which can fund projects which would not have found support from general financing facilities.
- Provide a financing channel for projects developed in response to specific energy efficiency policy instruments.
- Act as a demand driver, pulling through development of more projects than would have otherwise emerged.
- Prove the demand for, and performance of, energy efficiency projects.
- Act as exemplars to the financial sector that can attract additional private-sector capital into the sector.
- Help build capacity in project development and financing which will enable a more efficient and active market in energy efficiency financing.

3 THE DESIGN OF ENERGY EFFICIENCY FINANCING INSTRUMENTS

A. THE IMPORTANCE OF A SYSTEMS VIEW

The capacity to finance projects is primarily driven by the availability of capital for energy efficiency; however, the provision of capital by itself is not sufficient. The existence of derisking tools can build the capacity to finance and help increase the capital available for energy efficiency.

Figure 1. A systems view of the drivers needed to upscale energy efficiency



Source: Compiled by author, ESCWA.

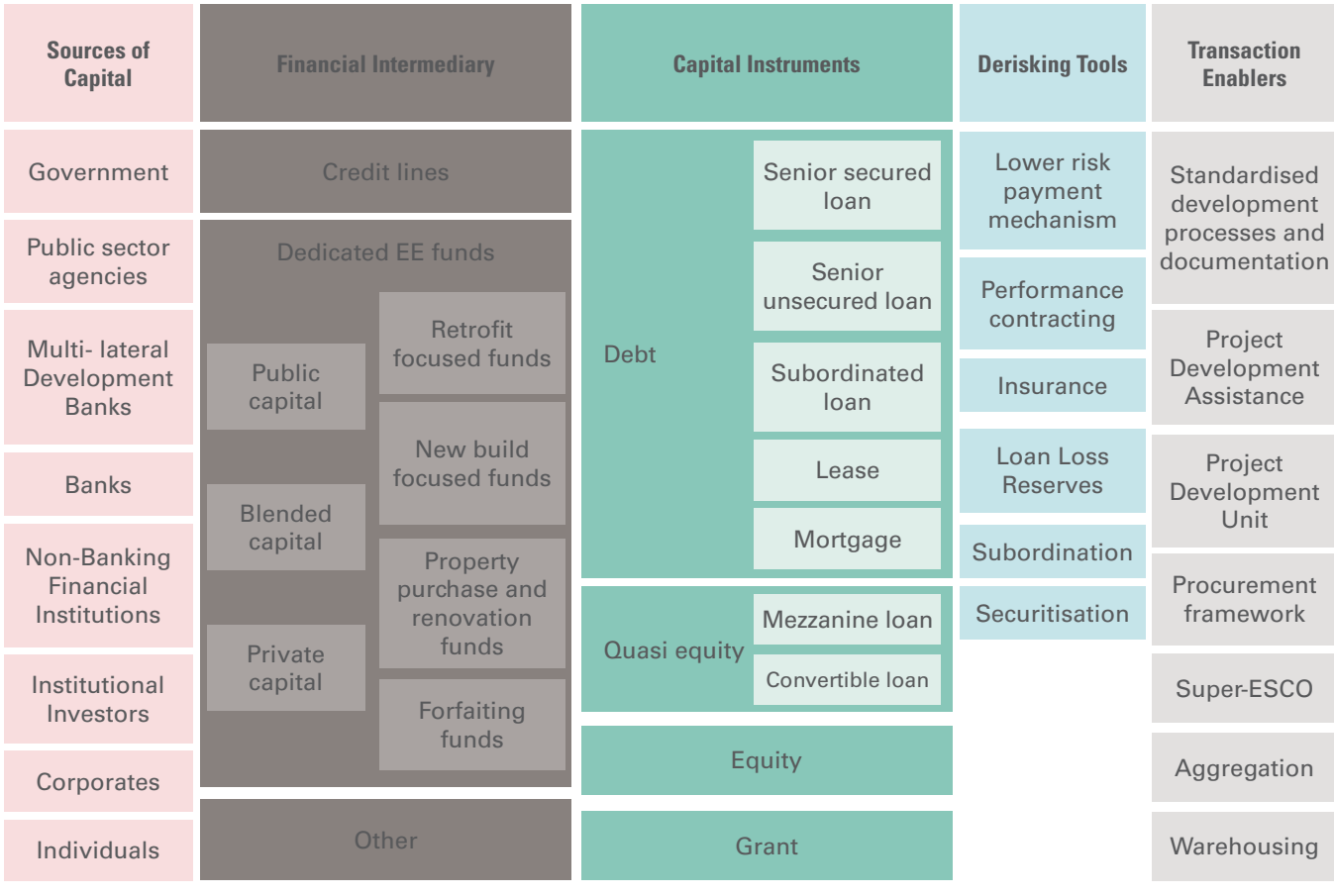
B. THE FIVE COMPONENTS OF ENERGY EFFICIENCY FINANCING INSTRUMENTS

The five components that come into designing financing instruments are the following:

- Sources of capital.
- Type of financial intermediary delivering the instrument.
- Type of capital provided (capital instrument).
- Use of derisking tools for risk mitigation.
- Use of transaction enablers.

The public-private partnership or blended capital model, when properly designed, holds significant promise for helping to increase investment into energy efficiency, particularly for private-sector institutional investors that lack experience and confidence in the asset class. It does, however, require aligning private-sector incentives with public-impact objectives.

Figure 2. The components of financing instruments



Source: Adapted from OECD, 2015. Mapping Channels to Mobilise Institutional Investment in Sustainable Energy: Green Finance and Investment. OECD Publishing, Paris.

1. Types of financial intermediaries: funds and credit lines

(a) Credit lines

Credit lines for energy efficiency lending are backed by credit lines from multilateral banks. As markets evolve, local banks need to be encouraged to establish dedicated energy efficiency products similar to home loans. This requires proving that a market exists or creating a market, addressing real and perceived risks, and building capacity within local banks to originate and underwrite energy efficiency loans.

Box 2. The European Investment Bank's Private Finance for Energy Efficiency credit lines

The Private Finance for Energy Efficiency (PF4EE) was established in 2014 by the European Investment Bank and the European Commission to address the limited access to adequate and affordable commercial financing for energy efficiency investments. PF4EE provides credit lines to commercial banks in several European Union member countries. Once agreed, the PF4EE facilities provide loans for up to 75 per cent of the capital cost of eligible energy efficiency measures with a maximum loan amount of €5 million. Loans are available over a 3-to-20-year term. PF4EE also provides a risk-sharing facility which is capped at 16 per cent of each bank's energy efficiency loan portfolio. It also provides expert assistance to the banks to build local capacity in the financial sector.

More information can be found in the section on example financing instruments.

Source: Private Finance for Energy Efficiency, 2019. Why PF4EE?

(b) Funds

Funds can be debt funds, equity funds or mixed debt-and-equity funds. Most energy efficiency funds are primarily debt funds. Each fund will have a specific investment focus or purpose written into its governance structure, which will include the following factors:

- Specific target sector, such as residential, commercial or public-sector buildings.
- Investment mandate, such as retrofit projects, building acquisition and refurbishment, new build, and forfaiting.
- Type of instrument, such as debt or equity, or acceptable split between them.
- Target returns.
- Any specified non-financial target such as tons of carbon dioxide (CO_2) saved per amount invested.

Box 3. The Carbon Neutral Real Estate Fund

The Carbon Neutral Real Estate Fund acquires commercial buildings that require refurbishment to bring them to a higher standard of energy performance, and plans, executes and finances the work. The improvement in energy performance adds value to the buildings, which are then either resold or held to produce investment income. The fund has outperformed the benchmark index for balanced property funds.

Source: Columbia Threadneedle Investments, 2020. Carbon Neutral Real Estate Fund.

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2. Types of capital (capital instruments)

Table 2. Types of capital

TYPES OF CAPITAL	DESCRIPTION
DEBT	Borrowers commit to pay to the lender the principal and interest (cost of funding) following an agreed schedule. Borrowers use assets as collateral as reassurance to the lender. Debt instruments include loans, mortgages, leasing, convertible loans, and bonds. Loans can use blended capital, namely, from subsidized loans and private capital to reduce borrower costs.
EQUITY	Equity financing means taking an ownership stake in a company or project in return for a share of the profits of the company/project and the investment stake appreciation. Quasi-equity instruments have debt-like properties and equity-type functionality. It is less expensive than straight equity but can provide virtually the same level of value as a straight equity investment. Specifically, quasi-equity financing can be in the form of mezzanine debt, venture debt, convertible debt, structured equity, and preferred equity.
GRANTS	Grants are non-repayable contributions (cash or in-kind) bestowed by a granter (often a Government agency, corporation, foundation, or trust) to a recipient for a specified purpose. Grants are usually conditional upon specific objectives on use or benefit and might require a proportional contribution by the recipient or other grantors.

Source: OECD, 2015.

3. Derisking (risk mitigation) tools

Credit enhancements

(a) Loan loss reserve (LLR): LLRs set aside a proportion of the capital to cover potential losses and help reduce repayment risk. If a borrower defaults, the lender is repaid using the reserve fund.

(b) Loan guarantees: Loan guarantees (full or partial) are provided either by Government agencies or specialised guarantee institutions.

(c) Debt service reserve fund (DSRF): A DSRF sets aside a limited pool of funds from which lenders or investors can recover overdue debt service payments. In the event that overdue debt service payments lead to a customer default, the lender or investor can keep funds it has received from the DSRF to offset the loss.

(d) Subordinated capital: Subordinated capital takes on the majority of customer default risk and acts as a credit enhancement for senior capital. Subordinated capital is invested in loans or pools of loans and typically earns interest from the performing loans and could even offset losses on customer defaults, making it available for reinvestment in the future. The fact that it needs to earn a return means that it can be an expensive solution, particularly in markets where the risk-free rate is already quite expensive.

Table 3. Key credit enhancement considerations

CREDIT ENHANCEMENT TOOL	LIKELIHOOD OF DEPLETION OVER TIME	STRENGTH OF PROTECTION TO LENDERS	COMMON USES
LOAN LOSS RESERVE (LLR)	High; defaults reduce LLR size	Low; lenders share each loss, coverage capped at a percentage of loan pool	Small loans, partnerships with individual lenders
LOAN GUARANTEE	N/A; guarantees often do not have a maximum amount	High; lenders shielded from all exposure to losses	Large pools of loans, very flexible
DEBT SERVICE RESERVE FUND (DRSF)	High; defaults reduce DRSF size	Medium; lenders protected from cash flow uncertainty and 100 per cent of individual losses, but coverage capped	Large loans for which timing of payment receipt is essential
SUBORDINATED CAPITAL	Low; interest earned can offset defaults	Medium; lenders covered from all individual losses, but coverage capped	Large pools of small loans or large loans

Source: State and Local Energy Efficiency Action Network, 2014.

4. Other derisking tools

(a) Insurance: There are various types of insurance, including project performance insurance which mitigates some of the technical performance risks, but it can be expensive and may not be available at all in some markets.

(b) The use of performance contracting through ESCOs and Super ESCOs, using energy performance contracts to guarantee results: The use of ESCOs and EPCs can reduce the financial risk of projects for both the customer and the provider of finance.

(c) Securitization: The process whereby illiquid or small-scale assets, such as cash flows from a portfolio of energy efficiency loans, are transformed into a standardized and tradable asset. Securitization requires sufficient asset quality and scale.

(d) Use of lower-risk repayment mechanisms: In PACE, repayments of loans for energy efficiency improvements are added to property taxes over a long term. In OBF, periodic payments to repay a loan used to fund an energy efficiency project are added to the beneficiary's utility bill. OBF can be lower risk as consumers have a higher tendency to pay their electricity bills than other debts due to the threat of disconnection.

5. Transaction enablers

(a) Project development assistance

PDA facilities are specific funds set aside, either as risk capital or grants, that can be used by project developers and/or hosts to develop projects to the point at which they can be financed. Some PDA programmes notably require the achievement of a certain investment leverage ratio.

(b) Project development units

PDUs are specialized teams established to assist project hosts to develop projects to the point at which they can be financed and are often supported by PDA funds.

(c) Procurement frameworks

A procurement framework is a standardized way of procuring project services such as engineering, but also equipment and project delivery services.

(d) Super energy service companies

As part of the multiple functions of Super ESCOs, they are transaction enablers as they act as project developers, usually for portfolios of projects, and can connect projects to finance.

(e) Aggregation or bundling

Aggregating multiple projects helps reduce transaction costs and limits risk exposure as the financier is exposed to the risk of a portfolio of projects rather than a single project.

(f) Warehousing

Warehousing is the process of pooling projects within one vehicle in order to reach a size where the aggregated asset becomes attractive either for an outright sale to large investors or securitization through bond issuance.

(g) Standardization tools

In order to scale investment in any asset class, the finance industry requires standardization. Energy efficiency is not yet a recognizable asset class, partly because it is very heterogeneous and far from standardized.

(h) Grants and beneficial payment terms or costs

The provision of grants or beneficial payment terms to the customer can also be considered transaction enabler as they encourage customers to transact.

(i) Results-based financing

Programmes that reward the delivery of one or more outputs or outcomes by one or more incentives, financial or otherwise, upon verification that the agreed-upon result has actually been delivered.

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4 EXAMPLES OF EXISTING ENERGY EFFICIENCY FINANCING INSTRUMENTS

Table 4. Selected energy efficiency financing instruments

COUNTRY	FINANCING INSTRUMENT	TYPE	CAPITAL ALLOCATED/ DEPLOYED TO DATE	TARGET SECTORS	SOURCES OF CAPITAL	TYPES OF CAPITAL	TRANSACTION ENABLERS	DERISKING TOOLS
DUBAI	Etihad Energy Services	Super ESCO	Initial equity unknown but accesses private and public finance for projects	Buildings, street lighting	DEWA – equity into Etihad Energy Services, public and private project financing	Loans	Develops projects using internal resources	Energy performance contracts
JORDAN	CVDB municipal energy efficiency programme	Credit line	€45 million	Municipal projects including energy efficiency, renewables, buildings, streetlighting	EIB	Loan	Project development assistance	Guarantee under European Union's external lending mandate
MOROCCO	Morocco Sustainable Energy Efficiency Financing Facility	Credit line	€150 million	Energy efficiency, renewables, existing and new buildings	EBRD, AFD, KfW	Loans, leases, grants	Project development assistance	Guarantee
SAUDI ARABIA	Tarshid	Super ESCO	1.9 billion Saudi riyal ($507 million) capitalisation	Public buildings, street lighting	Public Investment Fund	Loans	Develops projects using internal resources	Energy performance contracts
TUNISIA	Energy Transition Fund	Fund	€70 million, €450 million mobilized	Energy efficiency, renewable energy	Tax revenues	Loans, equity, grants	Project development assistance	-

A. TUNISIAN ENERGY EFFICIENCY FUND

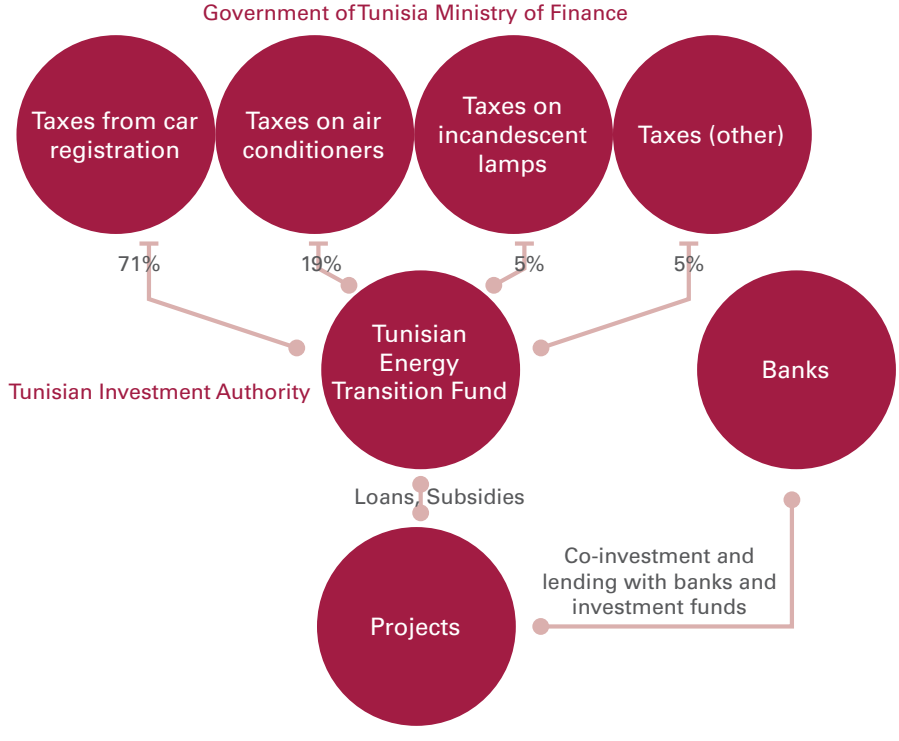
Subsidies are limited to measures which are cost-effective for the State but not profitable enough for the consumers. Loans are directed to members of the population who face difficulties of accessing conventional loans and to new technologies which banks are reluctant to lend on. Equity investment aims at members of the population with low equity capacity but strong skills. The Tunisian Energy Transition Fund utilizes a mechanism for repaying certain loans, specifically to install solar water heating and rooftop solar photovoltaic systems, through consumers' electricity bills.

B. JORDAN: MUNICIPAL ENERGY EFFICIENCY PROGRAMME OF THE CITIES AND VILLAGES DEVELOPMENT BANK (CREDIT LINE)

In May 2019, EIB provided a €45 million loan facility to the Cities and Villages Development Bank (CVDB), and CVDB agreed to provide an additional 45 million Jordanian dinar (JOD) to municipalities for investment into renewable energy and energy efficiency infrastructure.[3] Funding will be available for projects such as rooftop solar photovoltaic systems, street lighting refurbishments, energy efficiency projects in public buildings, and similar projects.

The EIB loan is covered by a European Union guarantee. To support the loan programme, a €1.4 million grant was agreed on in 2020 to fund advisory services including technical studies, developing a pipeline of projects and supporting the management of the programme.

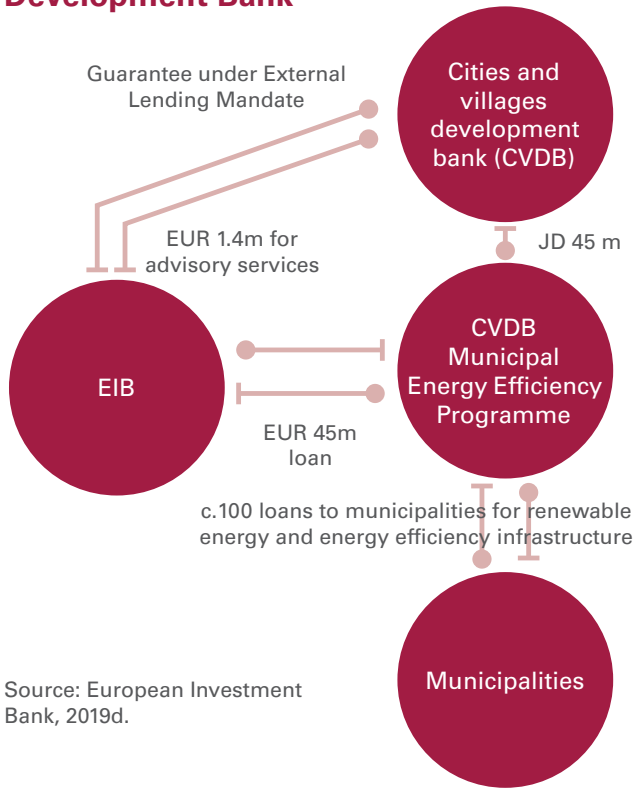
Figure 3. Structure of the Tunisian Energy Transition Fund



Source: Missaoui, Rafik, 2017. Overview of the Tunisian "Energy Transition Fund" and presentation of its RE incentives. Presentation presented at the UNDA Project Closing Workshop: "Renewable Energy UNDA Project Conclusions and Way Forward", Lancaster Plaza Hotel, Lebanon, 13-14 December 2017.

3 European Investment Bank, 2019d. CVDB – Municipal Energy Efficiency Programme.

Figure 4. Structure of the Municipal Energy Efficiency Programme of the Jordanian Cities and Villages Development Bank



Source: European Investment Bank, 2019d.

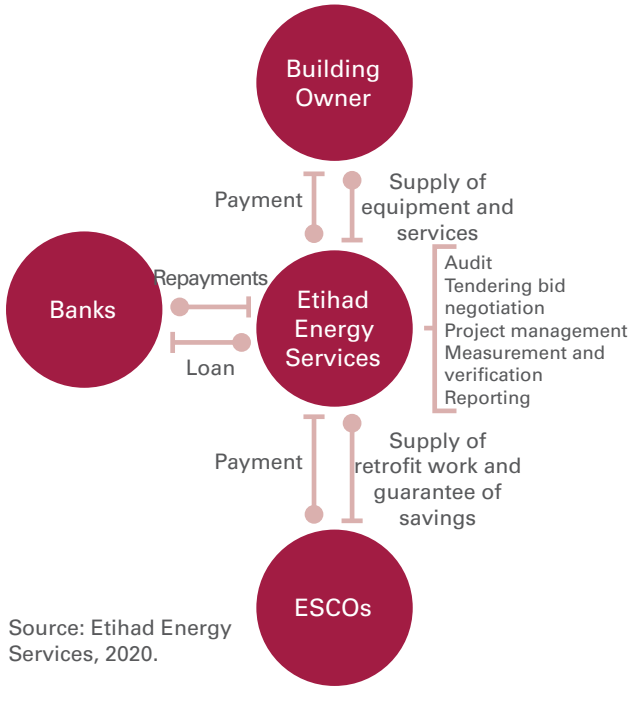
C. DUBAI: ETIHAD ENERGY SERVICES (SUPER ESCO)

The objective is to achieve energy and carbon savings and build capacity within the ESCO industry and the finance sector. Its main focus is on building retrofits and increasing the penetration of district cooling but also roof-top solar projects in government buildings and industrial facilities as well as residential building sector, including housing blocks and clusters of villas.

Specifically, it has a target of achieving energy savings of 1.7 TWh by 2030 and reducing CO2 emissions by 1 million tons by 2030.

Etihad Super ESCO develops projects, bundles them, contracts accredited private ESCOs to undertake the work on a guaranteed EPC, and arranges finance from public and/or commercial sources.

Figure 5. Operation of Etihad Super ESCO



Source: Etihad Energy Services, 2020.

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5

PROPOSED INSTRUMENTS TO DEVELOP SMART MARKET SOLUTIONS

A. ENERGY EFFICIENCY FUND DESIGN

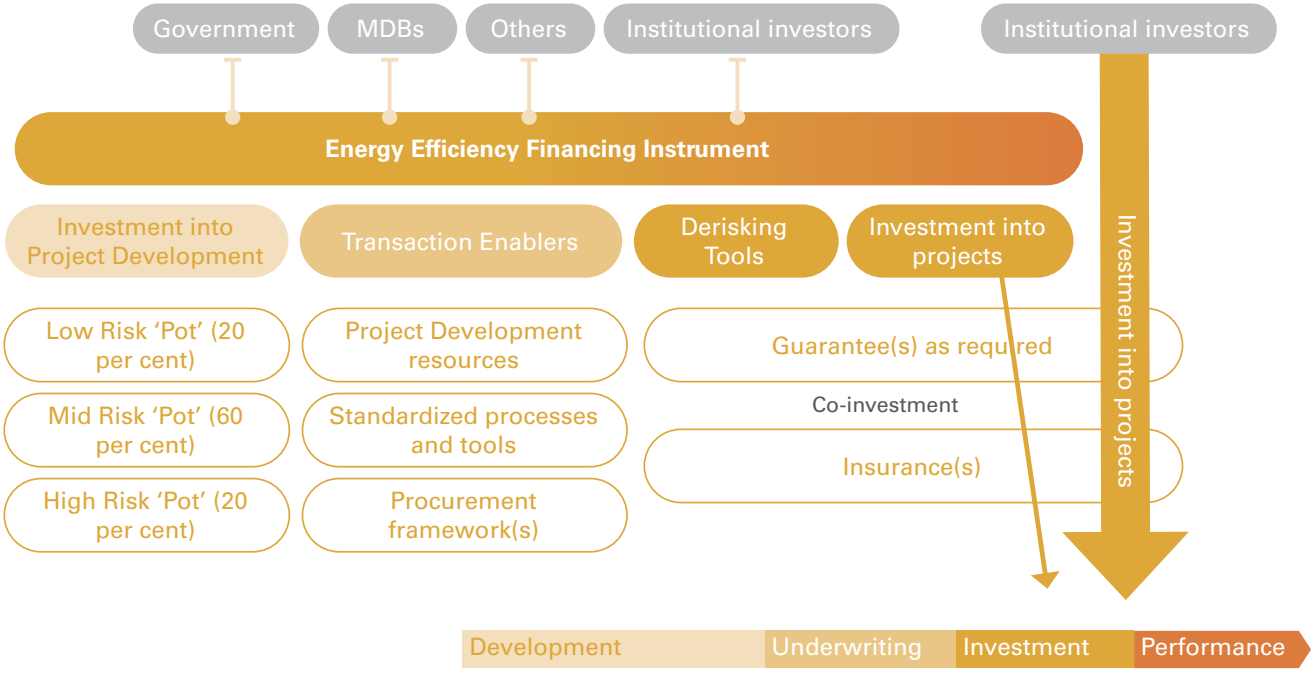
The fund can be capitalized by contributions from the Government, multilateral development banks, institutional investors, and other private companies. It should include the following three elements:

- Investment into project development.
- Transaction enablers appropriate to the market(s) it operates in.
- Derisking tools that are appropriate to the needs of institutional capital.

The overall aim of the fund should be to develop projects to the point at which they are bankable and secure funding for them. It can use some of its own capital in projects as co-investor alongside institutional investors and use appropriate tools such as guarantees to derisk projects for private capital.

The available development capital can be split into different risk pots which allows investment into the development stage of projects of varying risk profiles, with risk being determined by stage of development (with very early stage being the riskiest) and the nature of the project (a function of technology, market and other factors).

Figure 6. Generic design for an energy efficiency financing instrument



Progress of projects from development through to investment and implementation

Source: Compiled by author, ESCWA.

1. Regional and local variation to the generic model

Table 5. The effect of regional and local conditions on the design of financing instruments

COMPONENT	FACTORS TO CONSIDER
ROLE OF PUBLIC SECTOR AS PROVIDER OF CAPITAL AND CATALYST	Degree of development of financial sector Existence of sustainable investing regulations
DEGREE TO WHICH PUBLIC CAPITAL IS NEEDED FOR PROJECT FINANCING (AS OPPOSED TO DEVELOPMENT)	Experience in energy efficiency financing Availability of project-type finance Access to financial services (particularly in residential sector in least developed countries)
USE OF DERISKING TOOLS	Experience in energy efficiency financing Real and perceived risks of energy efficiency projects Sector focus (which affects ability to repay)
USE OF TRANSACTION ENABLERS	Level of demand for energy efficiency projects Capacity to develop energy efficiency projects

Table 6. Other factors in the design of financing instruments

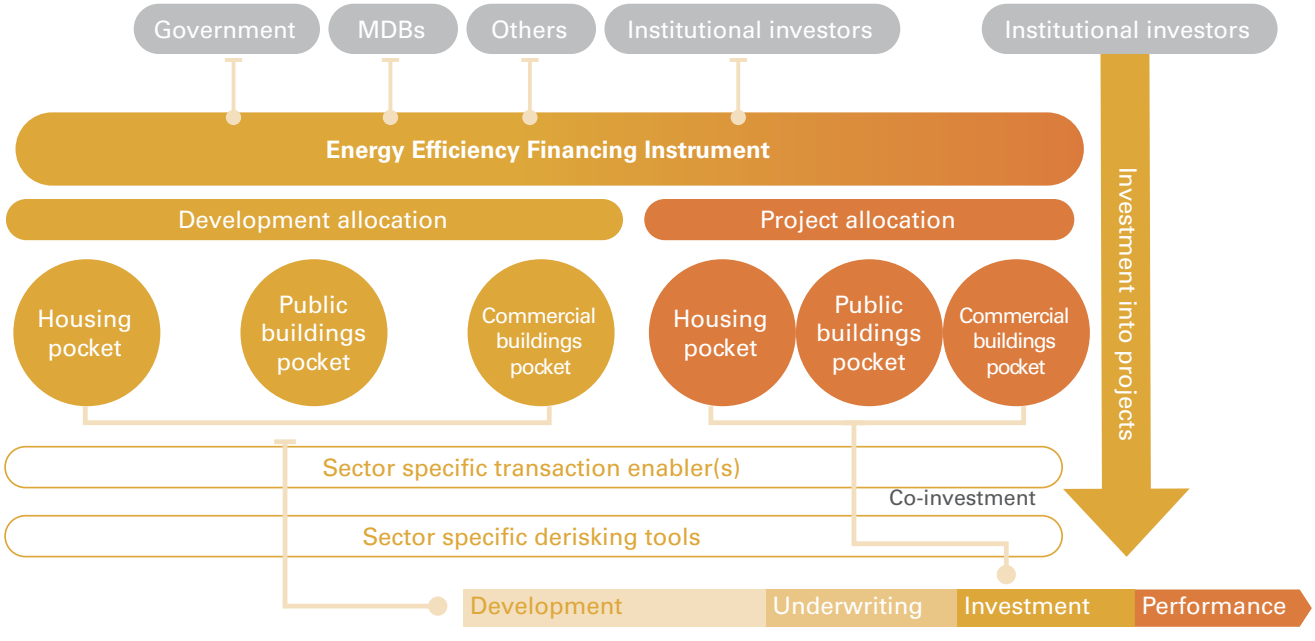
PARAMETER	FACTORS TO CONSIDER
FOCUS OF INVESTMENT (SECTOR)	Local needs Identification of the biggest impact
INVESTMENT SCOPE	• Local needs • In least developed countries, there is a need to integrate energy efficiency with energy supply to increase energy access • Integration with high-performance buildings and green buildings needs to be considered • Business models such as energy as a service or energy efficiency as a service • The instrument's investment rules must be appropriately designed

2. An instrument covering multiple sectors

Differences are significant between residential, public and commercial buildings, in terms of technologies, the nature of the end user and their drivers, as well as their use of and experience with financing tools. Different skill sets are needed to develop and implement projects, both technical skills and stakeholder engagement skills. These differences strongly suggest that a sectoral approach is optimum.

Due to the relatively high costs of establishing a financing instrument, a possible solution would be to establish an overarching fund with different pockets allocated to different sectors or localities. For each pocket, however, appropriate derisking tools and transaction enablers would need to be established, possibly on a localized basis.

Figure 7. Design of an energy efficiency fund with sector-specific pockets



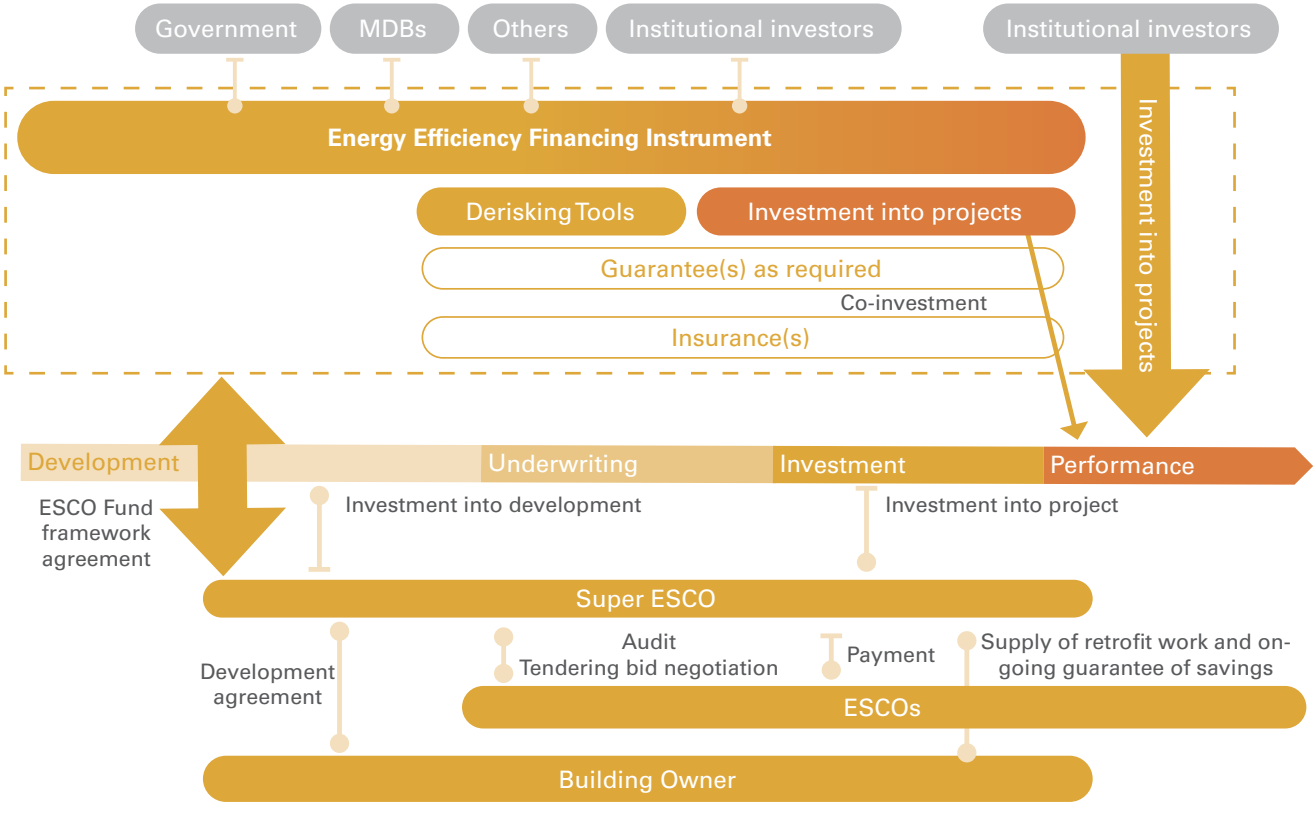
B. THE SUPER ESCO MODEL

It is important to link Super ESCOs with regulatory changes to ensure adequate accreditation and certification of ESCOs, and to link them with available project finance. To establish a Super ESCO, it is important to secure the source of project funds, and one model could be to combine a Super ESCO with a dedicated fund. The Super ESCO would be the primary transaction enabler for the fund while acting as a significant derisking tool.

C. AN INSTRUMENT FOR NEW HOUSING

The EcoCasa model has been successful in Mexico with scope to adapt the model for the Arab region, given the high rate of new buildings. Local adaptations will depend on the local institutional arrangements for funding new housing and the distribution of housing tenures. In the case of high levels of home rentals with large, public landlords, there is scope to scale up the model rapidly subject to funding.

Figure 8. Combined fund/Super ESCO instrument



D. ENABLING EXISTING FINANCIAL INSTITUTIONS TO MODIFY EXISTING PROCESSES: EFFICIENCY FIRST

One characteristic of investment to improve energy efficiency is that much of it is not undertaken for energy efficiency reasons such as renovations of buildings at the end of their useful life. Existing financial institutions lending to or investing in these markets have existing customer relationships, lending facilities and processes which can be adapted and leveraged to promote higher levels of energy efficiency. Interventions in this area require building capacity, particularly within the existing real-estate finance sector, and changing investment or lending processes to ensure that opportunities for higher levels of efficiency are not missed.

ING Real Estate Finance has developed a policy of only lending to commercial buildings with an energy performance certificate of C or above. Furthermore, it offers advice to property owners on options to upgrade the energy performance and more favourable terms on buildings or portfolios with higher performance levels. This has been driven by policy developments, specifically the introduction of MEPSs, which mean that some buildings could become stranded assets, and the recognition that higher-performing buildings and portfolios have lower financial risks.

E. CREATING AN ECOSYSTEM OF FINANCIAL INSTRUMENTS

Rather than simply focusing on creating dedicated single instruments, policymakers should consider the need to enable the creation of an ecosystem of financing instruments, covering multiple sectors and specific market segments.

6 PROPOSALS FOR MODELS TO DERISK ENERGY EFFICIENCY

Derisking tools are most often discussed in terms of derisking an investment for the provider of finance but derisking for the customer is also important to build confidence in any proposed project. Some of the macrolevel derisking tools, such as standardization of project development and documentation, apply to both the provider of finance and the customer

A. UNDERSTANDING RISK IN ENERGY EFFICIENCY INVESTMENTS

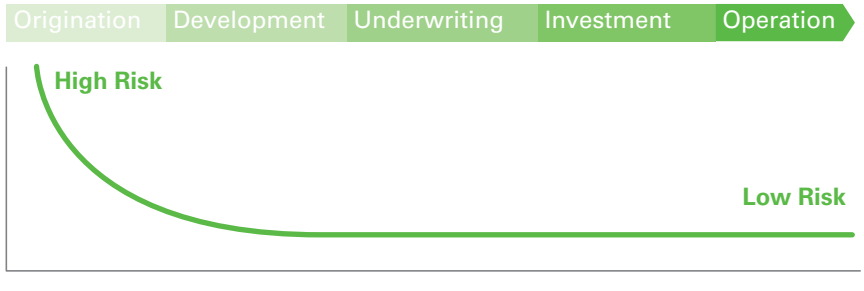
One problem that is now recognised is the scarcity of data on the actual performance of energy efficiency projects of all types. In many cases, the results of energy efficiency projects have not been measured; but even if results have been measured and verified, the actual performance has not been translated into actual investment performance or turned into any kind of risk analysis. This is in contrast to other asset classes, including wind power or solar power, where technical and financial performance is easily measured, typically through a fiscal electricity meter.

B. THE PROJECT LIFE CYCLE AND RISK

- Origination: the process of creating a project concept.
- Development: developing the project technically, financially and commercially to the point at which it becomes bankable.
- Underwriting: the process of deciding whether or not to invest, which normally involves assessing value and risks.
- Investment: the process of making the investment.
- Operation: the ongoing operation of the project throughout its life.

The risks of a project fall as it progresses through these stages, as shown in figure 9. Development is risky and is, therefore, usually undertaken using higher-risk equity or balance sheet funding. Once a project is developed, it has lower risks and can be financed by a combination of equity and debt. After the performance of the project is proven, it may be possible to reduce the cost of the debt and/or increase the proportion of debt used by refinancing through low-risk, relative return instruments such as bonds.

Figure 9. Stages in the project life cycle and risk profile



Source: Compiled by author, ESCWA.

C. MITIGATING RISK

1. Performance risks

Performance risk is essentially the risk that a project does not produce the financial returns that are projected at the time of making the investment decision.

A number of technical, human and financial factors can lead to savings being less than anticipated. They can be divided into intrinsic risks, which are those risks associated directly with the measure itself, and extrinsic risks, which are those factors that are outside the measure itself.

Below are mitigants to reduce each performance risk:

(a) Design

- Selecting the design team carefully based on its previous results.
- Specifying the use of appropriate national or international standards in project design, development and documentation.
- Requiring designers to share all data, calculations and simulation files for quality control.
- Insurance policies.
- Investors and lenders may choose to reduce savings projections (derating them) for use in a financial model.

(b) Equipment failure

- Selecting equipment vendors carefully based on experience, track record or approved vendor list.
- Requiring the longest possible warranties.
- Ensuring that manufacturers are able to stand behind the warranties offered.
- Ensuring that all equipment is operated as per the manufacturer's specifications and that all required maintenance procedures are carried out.
- Selecting appropriate insurance policies.

(c) Operations and maintenance

- Using measurement and verification as a way to track savings over time and quickly identify variations in savings that could result from poor maintenance and other factors.
- Providing an operations manual and ensuring that operators are properly trained in the use of the equipment. This also applies to householders, especially when dealing with measures such as sophisticated thermostats and controls.
- Including continuous commissioning into contracts, whenever appropriate.
- Requesting basic operational performance warranties from maintenance contractors.

(d) Weather

It is essential to normalize reported savings taking into account ambient temperature when studying the impact of an energy efficiency measure.

(e) Risks from change of building use patterns

Any calculation of energy savings is based on a baseline consumption and with the assumption that other factors remain constant. As building energy use is affected by many factors, especially by the numbers of occupants, hours of occupation and usage and operation patterns, any changes in these factors will affect the actual level of savings achieved in practice affecting both financial returns (savings) and, consequently, consumer confidence in the measures. In more complex situations such as large commercial buildings where an EPC is being used to implement and finance energy efficiency measures, these factors can lead to contractual disputes. Proper measurement and verification procedures, combined with other monitoring practices and appropriate contract clauses, are essential to avoid these kinds of disputes.

2. Energy price risks

Projected financial savings from any energy efficiency measure will be based upon a projected energy price, which is subject to change and could result in less than optimal savings despite the fact that the underlying level of energy savings in kWh may be exactly as predicted. In which case the bill would have been higher in the absence of the measures. Clarity in the performance contract is important to overcome this risk, and consumer education during the contracting period, and throughout the life of the measures, is important for avoiding this situation.

3. Credit risks

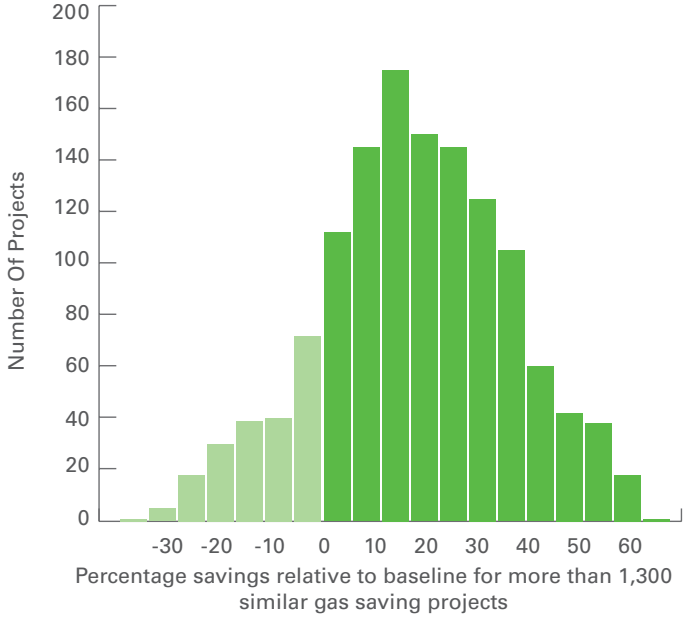
Credit risk can be exacerbated in energy efficiency projects which are aimed at low-income households, for instance. Credit risk can be mitigated by the following measures:

- Using standard credit checking techniques.
- Providing credit guarantees.

D. THE ACTUAL RISKS OF ENERGY EFFICIENCY

Analysis of data sets show that, on average, energy efficiency measures do perform and that the risks are relatively low. Developing portfolio analysis for energy efficiency is an important development for energy efficiency financing. One of the barriers to scaling up investment into energy efficiency is its perceived risk, which is really based on an absence of performance data rather than data on poor performance.

Figure 10. Savings from a portfolio of more than 1,300 similar gas saving projects in California



Source: Golden, Matt, Adam Scheer and Carmen Best (2019). Decarbonization of electricity requires market-based demand flexibility. The Electricity Journal 32, Issue 7, August-September 2019, 106621.

E. EXAMPLES OF MACRO-LEVEL DERISKING TOOLS

A number of examples of macro-level derisking initiatives exist in different markets:

- Mechanisms to increase communication between the finance and energy efficiency industries, as part of capacity-building.
- Collection and dissemination of data on energy efficiency investments.
- Development and adoption of standards and standardized tools.
- Certification and accreditation schemes.
- Development of insurance markets.

F. INCREASING COMMUNICATIONS BETWEEN THE FINANCE AND ENERGY EFFICIENCY INDUSTRIES

Traditionally, there has been very little contact between the energy efficiency industry and the finance industry because the scale of energy efficiency financing has been very small. This gap inhibits investment, particularly when projects are developed in ways that do not meet the needs of the finance industry. It is important to increase contact and understanding between the two sectors. This is an important area for building capacity.

G. DATA COLLECTION AND DISSEMINATION

Investors and lenders use data to assess risk and price financial products. The paucity of actual performance data, both technical and financial, creates uncertainty which increases the risk premium required by lenders, leading to a mismatch between pricing and actual risks, or completely prevents investment. Establishing mechanisms through which data can be collected and shared can be an important way to build understanding of the actual risks involved in energy efficiency financing, building capacity within the finance industry and, hence, derisking investment.

H. DEVELOPMENT AND ADOPTION OF STANDARDS AND STANDARDIZED TOOLS

Financing any category of projects, or asset class, at scale requires standardization in order to reduce transaction costs and risks, facilitate capacity-building within the finance sector and enable secondary markets to develop.

1. Standardization of project development and documentation: the Investor Confidence Project

Although design standards do exist in most countries, their application can vary. One approach to standardization that has been used in the United States, the European Union and Canada is the Investor Ready Energy Efficiency™ (IREE) project certification system by ICP. IREE uses a set of open source protocols, developed for different types of projects such as simple, single technology or complex, multi-technology projects.

Project developers can be accredited as ICP project developers based on their qualifications, experience and having passed an ICP training course. Projects can be certified as IREE projects if the following applies:

- They have been developed by an ICP-accredited project developer.
- They have been developed and documented

following the appropriate ICP protocol.
- The project has been assessed by an ICP-accredited quality assurance professional.

In the European Union, the development of ICP was supported by the European Commission Horizon 2020 funding. As each country within the European Union has different technical standards, the protocols had to allow for variations between countries whilst maintaining a common quality standard. Such an approach would also be possible within the Arab region.

2. Standardization of contracts

Standardization is also important for contracts, particularly EPCs. Such contracts are complex by nature, and lack of standardization hampers their adoption. Standardization reduces transaction costs and risks when seeking third-party capital for projects undertaken under an EPC.

3. Other standardized tools

- Initial assessment of potential energy efficiency projects that can be used to sell projects to decision makers.
- Underwriting/assessing the value and risk of energy efficiency projects.
- Matching projects to sources of finance.

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4. EEFIG Underwriting Toolkit

The EEFIG Underwriting Toolkit is designed to assist financial institutions to scale up their deployment of capital into energy efficiency. It was compiled with the following objectives in mind:

- Help originators, analysts and risk departments within financial institutions to better understand the nature of energy efficiency investments and, consequently, better evaluate both their value and risks.
- Provide a common framework for evaluating energy efficiency investments and analysing the risks that will allow training and capacity-building around standardized processes and understanding.
- Help developers and owners seeking to attract external capital to energy efficiency projects to develop projects in a way that better addresses the needs of financial institutions.
- Foster a common language between project developers, project owners and financial institutions.

5. Certification and accreditation schemes

Systems of certification and accreditation, both for individual practitioners and for companies, can build capacity and, hence, build confidence in energy efficiency and energy services propositions, helping to increase transaction flow.

Box 4. The accreditation scheme of energy service companies in Dubai

The accreditation scheme of energy service companies (ESCOs) in Dubai has already been mentioned in connection with the work of the Super ESCO, Etihad Energy Services. The accreditation scheme aims to give prospective clients confidence in contracting with ESCOs by recognizing companies which have appropriately qualified personnel in the organization, a robust financial status and a track record of successfully delivering energy saving projects in Dubai.

Saudi Arabia is following a similar model, and the approach is recommended for other countries aiming to use a Super ESCO to develop an ESCO market.

Source: Regulatory and Supervisory Board, 2020. ESCO Accreditation.

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7 DEVELOPING A COMMON LANGUAGE FOR ENERGY EFFICIENCY FINANCING

To increase investment flows into energy efficiency, there is a need in all markets to increase communication between energy efficiency professionals and finance professionals. The two professions speak very different languages, and failure to communicate is a barrier to developing bankable projects and programmes.

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