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**Industrial policy measures for industrial energy
efficiency improvements**

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1 Introduction

Over the last two decades, numerous governments, including developing country governments, have placed increasing emphasis on energy efficiency investments. In this paper, we set out to understand why countries pursue energy efficiency and which stakeholder is sitting in the driver's seat. We are interested in exploring what energy efficiency is translated into in the industrial sector and the rationale for it. Which stakeholders are called upon to take leading roles and which of them have a supporting role? As an increasing engagement by ministries of industry in developing policy measures to promote industrial energy efficiency has been observed in developing countries, we are particularly interested in determining the role of the ministry of industry and its underlying motivations. Finally, we investigate what types of policy interventions and/or policy instruments have been introduced and whether they have proved to be useful.

To shed some light on these topics, we review the industrial energy efficiency policy measures implemented in four developing countries, namely Colombia, Tunisia, Viet Nam and Moldova. We use UNIDO's taxonomy of industrial policy¹ developed by John Weiss, which accounts for differences between 'early', 'middle' and 'late' stages in IP measures. It is fair to expect the level of intricacy and stringency of policy instruments aimed at industrial energy efficiency to vary depending on countries' stage of development—and thus their implementation capacity—and motivations to do so.

UNIDO's taxonomy of industrial policy distinguishes between five areas or policy domains (product, labour, capital, land and technology markets) and two broad categories of policy instruments or mechanisms within these areas (market-based interventions or public inputs). While market-based interventions have an impact on prices and taxes, public inputs reflect the provision of goods or services by the government, including institutional creation and upgrading. These industrial policy instruments for IEE focus primarily on manufacturers and producers. There is also a feedback loop form in that they change consumer behaviour by promoting the consumption of energy efficient products. Higher demand for such products feeds back to the producer, resulting in increased energy efficient production. For environment-related IP policies, an additional category "Directed at consumers" should be added to the analytical framework of UNIDO's IP taxonomy.

In this paper, we focus on case studies involving countries in the early and middle stage of industrialization, and attempt to identify IP instruments for IEE. We find a broad range of policy

¹ WEISS, J. UNIDO Taxonomy of Industrial Policy, UNIDO (2015).

measures, initiatives and instruments adopted by national governments to promote IEE. Using the 4x3 matrix of classification (see Table 1), we describe the IP instruments implemented by the ministries of industry in the case countries to achieve IEE in the manufacturing sector.

Table 1 4x3 matrix of classification for IEE policy instruments

		Industrial Energy Efficiency Industrial Policy Instruments/Mechanisms		
		Directed at Producer/Manufacturer		Directed at
		Market-based Interventions/Decentralized Provision	Public Inputs/Direct Provision	Consumer
Policy Domain/Market Failure Being Addressed	Product			
	Capital			
	Labour			
	Technology			

This investigation is limited in scope and we acknowledge that some of the outlined policies and initiatives may not be applicable to all emerging economies. While we have attempted to also review what works and lessons learnt from implementing IEE instruments, we acknowledge the limit of desk-based reviews of secondary information. It is nonetheless relevant to showcase these practices and raise awareness about the ongoing commitments to IEE by governments, policymakers, industries and communities.

2 Colombia's case study: building blocks to join the 'club of best practices'

2.1 National development agenda and driving factors for IEE policies

Energy policy and specifically IEE policies are components of the general development vision the Government of Colombia has promoted since the 1990s, which aim to gradually reposition the country as a developed nation, as noted, for example, in the National Development Plan (PND) 2014-2018.² This comprehensive agenda, expressed in the current as well as in several former PNDs, covers nearly all major development challenges – from economic growth to peace and security. The policies promoted by the Government of Colombia since the 1990s have included approaches to overcome the obstacles to national progress and were strongly based on institutional development and international cooperation.³ The government has achieved steady economic growth over the last two decades and has made major progress in terms of improving the country's image. In 2015, Colombia became one of only three countries worldwide to reach the maximum score on the World Bank's strength of legal rights index.⁴

The progress achieved by several consecutive administrations moved to a new phase in the 2010s, when the Colombian government officially announced its plans to join the OECD. In 2013, the OECD Council initiated the formal accession process for Colombia. Joining the organization requires successful completion of negotiations with the committees responsible for different policy areas.⁵ The negotiation process in itself can be extremely valuable as it allows the country to further develop its public policies to correspond to OECD requirements. Over the last years, Colombia has thus undertaken efforts in energy and resource efficiency.⁶

The Colombian government's efforts in recent years to join the OECD have been the major driver of national IEE policy due to the organization's strict environmental requirements. OECD accession is an instrument just as much as it is the goal, and thus allows progress to be made in different areas of development.⁷ Increased competitiveness of Colombia's local industry is crucial for achieving the developed country status, as is the attraction of FDI – the national government has consistently been working towards improving the investment climate and attracting foreign investors.⁸ The government's efforts to implement international agreements,

² DNP, National Development Plan 2014-2018 (2015).

³ CRANE, C., Why Good Policy-Making Matters: The Accession Case of Colombia to the OECD, Economics and Finance, March 15, 2016.

⁴ WORLD BANK, Doing Business 2017, <http://www.doingbusiness.org/~media/WBG/DoingBusiness/Documents/Annual-Reports/English/DB17-Report.pdf>

⁵ ZÁRATE, M.T.N., VIDAL, A.H., Colombia Energy Investment Report (2016).

⁶ Colombia's resource efficiency policies are discussed in Fokeer, S., Lazzerini, I., Clara, M. Putting industrial policy to work for resource efficiency in developing countries, UNIDO Working Paper 13/2016.

⁷ CRANE, C., Why Good Policy-Making Matters: The Accession Case of Colombia to the OECD, Economics and Finance, March 15, 2016.

⁸ DNP, National Development Plan 2014-2018 (2015).

such as the Paris Agreement, serve the same goal of creating a better image of the nation – the Colombian government has been vocal on climate change for quite some time.⁹

According to our analysis, the following factors are the major drivers of Colombia's policy on IEE:

- Accession to the OECD
- Increased competitiveness of the national economy
- Attraction of FDI
- Implementation of international agreements.

2.2 Custodians of IEE policy and past experience on IEE

Systematic work on EE policy, including measures in industrial policy, started in Colombia in early 2000s. The main government agency responsible for Colombia's energy policy is the Mining and Energy Planning Unit (UPME).¹⁰ UPME is an autonomous organization which technically is under the supervision of the Ministry of Mines and Energy. The government body in charge of energy efficiency is the Intersectoral Commission for the Rational and Efficient Use of Energy (CIURE), which serves an advisory role to the Ministry of Mines and Energy.

The major piece of legislation in this area was the Programme for the Rational and Efficient Use of Energy (PROURE), which was introduced in 2001.¹¹ The programme was adjusted in 2003 and 2007, and included the establishment of CIURE. A special resolution of 2010 introduced the action plan for PROURE for 2010-2015.¹²

PROURE's main objectives are:

- Development of efficient and sustainable management in energy
- Establishment of economic, technical, regulatory and information conditions for the promotion of efficient energy goods and services.
- Strengthening institutions and promoting public-private partnership for the implementation of EE programmes and projects.
- Creation of incentives, including taxes, for EE programmes and projects.

⁹ GOVERNMENT OF COLOMBIA, Intended Nationally Determined Contribution (2015).

¹⁰ <http://www1.upme.gov.co/historia-de-la-upme>

¹¹ MARTINEZ, C.I.P., PINA, W.H.A., Energy Efficiency in Colombia: Trends and Challenges, International Journal of Energy Science (IJES) Volume 4 Issue 1, February 2014.

¹² PROURE, Plan of Action 2010-2015 (2010).

According to the current action plan, PROURE includes a special programme on IEE. This programme focuses on some major areas of action for industry:

- Introduction of energy management systems (EnMS)
- Optimization of the use of boilers
- Optimization of combustion processes
- Introduction of efficient lighting
- Cold chain optimization.

Within the scope of this approach, UPME implemented the national programme ‘Comprehensive Energy Management System’ (CEMS) in 2010-2013, focusing on capacity building for the EnMS.¹³ The tax incentives for IEE are derived from the Law of 1995 and further amendments, which initially introduced the elimination of VAT and income tax reductions for equipment and materials used for environmental monitoring.

2.3 The IEE policy instruments in effect

The most important component of the national EE policy for industry is the four-year national development plans (PND). The system of PNDs was introduced in the 1980s, with the current plan (covering the period 2014-2018) building heavily on the experiences of the PNDs in IEE policy for 2006-2010 and 2010-2014. The plan introduces ambitious targets on energy savings compared with the business-as-usual scenario: from 1.75 per cent in 2015 to 6.91 per cent in 2018.¹⁴ The plan introduces specific targets for the most energy-intensive industries – chemical, cement, iron, steel and non-ferrous metals, beverages and tobacco, and paper and printing. These industries are often viewed as the foundation of an intermediate stage of industrial development¹⁵ – and progress in these industries is the cornerstone for shifting to late stage industrialization and thus to transforming Colombia into a developed country.

To achieve progress in IEE, the PND focuses on the following measures:

- efficiency improvements of gas and solid fuel-fired boilers
- replacement of steam-based heating technologies by direct heat application
- mandatory use of electric motors compliant with minimum efficiency standards.

¹³ GLOBAL ENVIRONMENT FACILITY, Promotion of Industrial Energy Efficiency in Colombian Industries (2015).

¹⁴ DNP, National Development Plan 2014-2018 (2015).

¹⁵ See UNIDO Taxonomy of Industrial Policy (UNIDO, 2015) for more details on the stages of industrial policy and associated policy instruments.

To promote higher level decisions within the PND framework and the intended nationally determined contribution (INDC) to climate change mitigation, the government is currently implementing the Low Carbon Development Strategy (CLCDS), which introduced the development of the system of Sectoral Mitigation Action Plans (SMAPs).¹⁶

Colombia has steadily been improving its institutional system in the last years, enabling different government agencies to implement EE policies in their areas of responsibility.¹⁷ The Ministry of Commerce, Industry and Tourism (MinCIT) is in charge of the Industry SMAP, currently being developed, and the Ministry of Mines and Energy is responsible for the Electricity SMAP.¹⁸ The implementation of IEE policies and measures mostly lies in the sphere of responsibility of MinCIT. The Ministry of Environment and Sustainable Development (MinAmbiente) is also actively involved in the promotion of SMAPs. The process of SMAP formulation started in 2013, with some of them being launched in 2014.

For each SMAP, Colombia develops and implements a set of Nationally Appropriate Mitigation Actions (NAMAs). NAMAs are programmes for the EE improvements in different branches of industry or regions (e.g. 2016-2020 NAMA on Technology Transfer in the Industrial Sector of the Cundinamarca-Bogotá Region¹⁹), which will be implemented in cooperation with GEF. The programmes that will become part of the Industry SMAP are the NAMAs on metal works, iron and steel and bricks. SMAPs are expected to be developed for all industries of the economy to achieve EE improvements and implement national mitigation goals.

2.4 IEE policy instruments: barriers and lessons learnt

Building on the experiences with implementation of IEE measures via PROURE, CLCDS and SMAPs, the Government of Colombia identified the factors influencing progress in this area. According to analysis of the Ministry of Environment and Sustainable Development of Colombia, the main obstacles for the implementation of national IEE programmes, including the goals of the PND 2014-2018, are the following:²⁰

- Lack of knowledge and expertise at industrial enterprises and insufficient development of energy service companies (ESCOs);

¹⁶ GLOBAL ENVIRONMENT FACILITY, Promotion of Industrial Energy Efficiency in Colombian Industries (2015).

¹⁷ CRANE, C., Why Good Policy-Making Matters: The Accession Case of Colombia to the OECD, Economics and Finance, March 15, 2016.

¹⁸ MINISTRY OF ENVIRONMENT AND SUSTAINABLE DEVELOPMENT OF COLOMBIA (MINAMBIENTE), Colombia's Experience Requesting Technical Assistance from the Climate Technology Centre and Network (2014).

¹⁹ NATIONALLY APPROPRIATE MITIGATION ACTIONS, Colombia, <http://www.nama-database.org/index.php/Colombia>

²⁰ ECDBC (Estrategia Colombiana de Desarrollo Bajo en Carbono), Energy in Colombia (2014).

- Limited market opportunities;
- Lack of financial tools necessary for the implementation of IEE improvements;
- Significant upfront costs.

Some additional barriers were identified by the Climate Technology Centre and Network (CTCN) in a study developed in response to a request for technical assistance from the UPME, namely:²¹

- Inefficient pricing for gas – the price decreases with increasing consumption, which undermines incentives to improve IEE;
- Low level of knowledge of IEE programmes and incentives;
- Difficulties assessing available technologies and uncertainty about their performance.

In its Technical Assistance Response Plan on the national EE programme in Colombia, CTCN identified the following barriers and obstacles that make tax incentives less efficient instruments in terms of IEE promotion:²²

- Restrictions – the tax incentives are not inclusive and apply to a limited number of actors only;
- Stimulus only used for equipment replacement, not for expansion;
- Very high transaction costs – complex application procedures;
- High level of uncertainty – efforts and costs are high, while the outcome is uncertain;
- Lack of advice from the government – difficult for enterprises to make decisions;
- Institutions – enterprises need separate approvals from three different offices;
- Timing – long and complicated application process, while decisions on equipment replacement often need to be made quickly.

According to the Colombian Low Carbon Development strategy, which is based on the experiences with PND 2010-2014 and PROURE, one of the most important lessons gleaned was the necessity to develop innovative financial tools to fund IEE projects.²³ Other lessons learnt are the significance of the establishment of ESCO and the development of market and financial tools for their projects and the need to popularize and market the IEE measures and technologies to position them as the ‘win-win’ choice. Finally, the CLCDS focuses on the crucial importance of R&D for achieving a higher level of efficiency and adapting the measures and technologies to the national circumstances.

²¹ CLIMATE TECHNOLOGY CENTRE & NETWORK, Monitoring and Evaluation of Colombian National Promotion for Energy Efficiency (EE) Against National Targets: Final Report – Executive Summary (2016).

²² CLIMATE TECHNOLOGY CENTRE & NETWORK, Monitoring and Evaluation of Colombian National Promotion for Energy Efficiency (EE) Against National Targets: Final Report – Executive Summary (2016).

²³ ECDBC (Estrategia Colombiana de Desarrollo Bajo en Carbono), Energy in Colombia (2014).

Table 2 Policy instruments in Colombia

		Industrial Energy Efficiency Industrial Policy Instruments/Mechanisms		
		Directed at Producer/ Manufacturer		
		Market-based Interventions/ Decentralized Provision	Public Inputs/Direct Provision	Directed at Consumer
Policy Domain/Market Failure Being Addressed	Product	<p><i>Programme for the Rational and Efficient Use of Energy</i></p> <ul style="list-style-type: none"> → Energy efficiency labels on equipment → Creation of seal of excellence in energy in accordance with Colombia's energy efficiency regulations → Creation of database of measures in energy efficiency implemented by enterprises for improved information sharing → International knowledge exchange and national knowledge networks. Knowledge sharing via business conferences and market studies 	<p><i>Low Carbon Development Strategy (CLCDS)</i></p> <ul style="list-style-type: none"> → Development of Sectoral Mitigation Action Plans (SMAPs) – SMAP Industry for the Ministry of Commerce, Industry and Tourism → Development of Nationally Appropriate Mitigation Actions (NAMAs) for EE in industry. <ul style="list-style-type: none"> • Example of NAMA: the goals of the NAMA Technology Transfer in the Industrial Sector of the Cundinamarca-Bogotá Region: <ul style="list-style-type: none"> ○ Implement and operate pilot projects in the industry, including best operative energy practices (BOPs), process and technology reconversion, innovation and adaptation projects ○ Knowledge management for the replication of the technology transfer pilot projects' impact in the industry ○ Monitoring, learning, adaptive feedback and evaluation → Electricity SMAP – EE component: <ul style="list-style-type: none"> • Institutional strengthening through the creation of an agreement or framework for energy efficiency to support EE projects and initiatives in Colombia. • Issue EE technical regulations • Creation of an EE fund to support projects involving small and medium-sized enterprises • Development of national EE programme for air conditioning <p><i>PROURE, CLCDS</i></p> <ul style="list-style-type: none"> → Setting levels of efficiency and systems performance by establishing protocols and system optimization, labelling systems, control and decommissioning → Intensity indicators – goals for IEE for public-private partnerships 	<p><i>National Development Plan (PND) 2014-2018</i></p> <ul style="list-style-type: none"> → Promotion of information policies – awareness-raising on EE goods.

		Market-based Interventions/ Decentralized Provision	Public Inputs/Direct Provision	Directed at Consumer
Policy Domain/Market Failure Being Addressed	Capital	<p><i>NPD, CLCDS, PROURE</i></p> <ul style="list-style-type: none"> → Financing at concessional rates – promotion of existing credit lines and creation of new lines for expansion and purchases of new equipment → Specific funding schemes for SMEs – systems of guarantees <p><i>Tax exemptions for the import of renewable energy and energy efficiency equipment materials</i></p> <ul style="list-style-type: none"> → Extension of the 1995 tax exemption law and an amendment to the list of raw materials and products that are subject to reduced import duties and exempt from VAT → Tax deductions for the purchase of efficient equipment based on the energy audit recommendations <p><i>Law No. 223 of 1995</i></p> <ul style="list-style-type: none"> → Established a mechanism to provide fiscal incentives, including elimination of VAT and income tax reductions for equipment and tools for environmental monitoring and control. 	<p><i>Project funding and loans, other means of financial support from GEF, Inter-American Development Bank, UN agencies and other international bodies</i></p> <p><i>SMAPs and NAMAs</i></p> <ul style="list-style-type: none"> → Accelerated amortization for efficient equipment → Free energy audits for SMEs – identification of energy savings opportunities and lists of measures 	

		Market-based Interventions/ Decentralized Provision	Public Inputs/Direct Provision	Directed at Consumer
Policy Domain/Market Failure Being Addressed	Labour		<p><i>National programme 'Comprehensive Energy Management System' (CEMS) 2010-2013</i></p> <p>→ Established to raise awareness, train and disseminate Energy Management Systems (EnMS), focused on developing technical capacities.</p>	
	Technology	<p><i>PROURE</i></p> <p>→ Implementation of ISO 50001 Standard</p> <p>→ Implementation of energy savings goals within the framework of EnMS and monitoring schemes</p>	<p><i>National Development Plan (PND) 2014-2018</i></p> <p>→ The energy savings estimated by the draft version of the ND Plan would be achieved as a result of the implementation of measures focused on the following technologies:</p> <ul style="list-style-type: none"> • efficiency improvements of gas and solid fuel-fired boilers • replacement of steam-based heating technologies by direct heat application • mandatory use of electric motors compliant with minimum efficiency standards. <p><i>PND, CLCDS, PROURE</i></p> <p>→ Mandatory use of latest technologies and equipment</p>	

3 Tunisia's case study: on the path towards energy security

3.1 IEE and the national development agenda

Tunisia was one of the early movers among developing countries to begin implementing 'rational-use' policies in energy. The country began promoting energy conservation as early as the 1980s, despite being a net exporter of energy up to the early 2000s. The plans for future energy efficiency policies in the National Sustainable Development Strategy (SNDD) of 2011 built on the experience of the previous two decades. According to SNDD, the total cumulative primary energy savings achieved through the implementation of energy efficiency measures should reach 30 Mtoe by 2020 and 80 Mtoe by 2030.²⁴ Out of these savings, industry is expected to contribute 44.5 per cent of the total, compared with 29.5 per cent for transport and 26 per cent for buildings, making it the key element of SNDD goal realization.

Despite this, the country became a net energy importer by the mid-2000s, due to the depletion of oil and gas fields and steady economic growth. According to World Bank estimates, Tunisia was covered around 85 per cent of its primary energy demand from domestic sources by 2015, with the difference predominantly consisting of imported gas from Algeria.²⁵ Energy efficiency for the national economy, specifically for industry, became more prominent in the mid-2000s. It is expected that due to the growth of consumption, driven by industry as well as transport and construction, the country may face a shortage of primary energy by 2020.²⁶ The need to meet this growing energy demand required the government to undertake proactive measures, including the installation of an underwater cable to import energy from Italy, adding other sources to the energy mix and increasing the national economy's energy efficiency.

3.2 Driving factors behind IEE policies and instruments

The most important driver of IEE policy is the fact that energy security has become a major concern for the government in recent years. However, other factors play a significant role in shaping the national approach to IEE. Industry comprises around 30 per cent of the national GDP and is one of the major drivers of the country's economic growth.²⁷ It is therefore natural to promote policies and instruments that can make the country's industry more competitive internationally and less dependent on state subsidies. Further industrial growth without IEE measures could result in an unsustainable burden for the state budget due to subsidized energy prices for industrial users.

²⁴ REPUBLIC OF TUNISIA, National Sustainable Development Strategy (in French), (2011).

²⁵ WORLD BANK, Tunisia Faces Tough Strategic Choices as Demand for Energy Begins to Outstrip Supply (2016).

²⁶ WORLD BANK, Tunisia Faces Tough Strategic Choices as Demand for Energy Begins to Outstrip Supply (2016).

²⁷ World Bank Open Data Platform, (2016).

Additionally, at COP 21 in 2015, Tunisia committed to reduce the GHG emissions of its national economy by 41 per cent by 2030 in comparison with the 2010 level.²⁸ This ambitious plan cannot be implemented without significant progress in EE, particularly in light of the growing industrial sector. In parallel, the promotion of policies supporting the implementation of the Paris Agreement would become a strong argument in favour of attracting donor funding for the development of national industry. Hence, the following factors can be deemed the most important driving forces behind the IEE policies in Tunisia:

- Energy security
- Increased competitiveness of the national economy
- Implementation of the international agreement (Paris Agreement)
- Availability of donor funds for IEE improvements.

3.3 Main custodian of the IEE policy and the role of the Ministry of Industry

Tunisia has a long implementation record of energy efficiency policies. One of the drivers of success in this regard are the country's efficient institutional arrangements, which was noted, e.g. by the World Bank after the implementation of the energy efficiency project in Tunisia.²⁹ The Ministry of Industry, Energy and Mining manages the national policy on both energy and industry, resulting in the harmonization of approaches to both spheres and thus faster decision-making.

The office responsible for energy efficiency within the Ministry is the National Agency of Energy Conservation (Agence Nationale pour la Maitrise de l'Energie – ANME), which was established in 1985. ANME is an autonomous organization implementing government policies related to energy efficiency and renewable energy sources. ANME promotes a special programme on energy efficiency in industry.

3.4 Past experience with energy efficiency and IEE

The institutional, policy and legal IEE framework in Tunisia has evolved over the last three decades. This extensive experience allowed the government to craft a balanced set of instruments based on both administrative regulations and market-based measures and incentives for the use of energy efficient equipment and the implementation of IEE measures.

The government passed Law 94/127 on tax exemptions for imports of energy efficiency equipment and materials (VAT exemptions and certain import duties). The main piece of

²⁸ INTENDED NATIONALLY DETERMINED CONTRIBUTION (INDC), Tunisia (2015).

²⁹ WORLD BANK, Tunisia - Energy Efficiency Program. Industrial Sector (2014).

legislation on energy efficiency policy in the 2000s was Law 2004-72 on Energy Efficiency: Renewable Energy Provisions, which introduced the current functions of ANME in the area of energy efficiency:

- Development of new procedures for the implementation of energy efficiency projects;
- Implementation of a labelling scheme on energy efficiency for the equipment and products;
- Promotion of training and research in the area of energy efficiency;
- Review and assessment. The ANME obtained the right to control the efficiency of supporting mechanisms and the use of government aid.

To a significant extent, Law 2004-72 on Energy Efficiency was based on previous experiences with energy efficiency and on the lessons learnt during the implementation of development projects, specifically those promoted jointly with the World Bank (project P078131)³⁰, GEF and IBRD. Law 94/127 became the basis for the National Energy Efficiency Programme 2008-2011.

3.5 IEE policy instruments in effect

According to the World Bank, the Government of Tunisia efficiently used its experience with policy implementation and the feedback on its activities, resulting in the iterative progress of its policies and activities in the area of IEE.³¹ Decree 2010/1521 (of 2010) builds on the Law of 1995 (Decree 95/744) and provides tax exemptions for the import of energy efficiency equipment and materials.³² Similarly, Law 2009/7 on Energy Efficiency: Renewable Energy Provisions builds on the experiences with the law from 2004. It introduces a system of fines for equipment that does not comply with the energy efficiency requirements. The funds obtained from these fines are transferred to the Energy Efficiency Fund (FNME), which was established in 2005 and is administered by ANME to fund energy efficiency projects.

In addition to these regulations, Tunisia uses other instruments as well to implement IEE measures and projects in the country's economy. According to a UN ESCWA study, industrial enterprises in Tunisia can count on the following forms of financial support from FNME:³³

³⁰ WORLD BANK, Tunisia - Energy Efficiency Programme. Industrial Sector (2014)

³¹ WORLD BANK, Tunisia - Energy Efficiency Programme Industrial Sector Project. Implementation Completion and Results Report – ICR1938 (2012).

³² INTERNATIONAL ENERGY AGENCY, Tax exemptions for the import of renewable energy and energy efficiency equipment and materials (Decree 2010/1521) – Tunisia (2013).

³³ UNITED NATIONS ECONOMIC AND SOCIAL COMMISSION FOR WESTERN ASIA, Case Study: Tunisia. Policy Reforms That Were Implemented to Promote Energy Efficiency in the Industrial Sector (2014).

- Energy audit: 70 per cent of the costs with a maximum of TND 30,000;³⁴
- Non-material investments: 70 per cent with a maximum of TND 70,000;
- Material investments: 20 per cent – the upper limit is determined by annual energy consumption: TND 100,000 for enterprises consuming less than 4 ktoe; TND 200,000 for those consuming between 4 ktoe to 7 ktoe; and TND 250,000 for those consuming more than 7 ktoe.

An energy audit is usually the first step in collaborations between an industrial enterprise and FNME. Such audits normally include an assessment of current energy use and energy performance, an evaluation of the energy management system (EnMS), recommendations for improvements of energy efficiency measures and the EnMS and an action plan for the enterprises.

Once the audit has been completed, the enterprise can sign an Energy Efficiency Programme-based Contract (EEPC) with ANME, which makes funding opportunities available for different types of financial support. EEPC includes a list of proposed IEE measures to be implemented over a 3-year period, the necessary investments, expected savings and proposed subsidies.

3.6 IEE policy instruments: results and lessons learnt

Tunisia's extensive experience with the implementation of IEE policies and projects in recent years provides valuable insights. According to the Implementation Completion Results Report on the World Bank project (ICR1938)³⁵, the most important lessons learnt are the following:

- Flexibility of decision-makers in the implementation phase is the key factor of success;
- The contribution of international experts is crucial in the initial phase of project planning and implementation;
- In terms of financial support, funding opportunities for IEE projects may be limited due to the conservative approach of private financial institutions;
- A special component of national IEE programmes should focus on the promotion of the energy service companies (ESCO) concept as the key element for additional sustainable IEE improvements in the national economy, e.g. through a set of demonstration projects.

³⁴ TND 1 equals approximately USD 0.45 as of November 2016.

³⁵ WORLD BANK, Tunisia - Energy Efficiency Program Industrial Sector Project. Implementation Completion and Results Report – ICR1938 (2012).

USAID analysed a series of projects in Tunisia (in 2003-2005, 2009-2014, 2010-2015) on energy efficiency projects implemented with assistance from the World Bank, IBRD and the GEF. According to USAID's Energy Toolbox, some of the most important lessons learnt based on experiences with the implementation of these projects are:³⁶

- Energy efficiency funds require lower-than-market interest rates to attract clients, as well as other incentives for potential customers;
- Priority should be given to short-term loans for projects with high rates of return;
- Simplification of the control system to avoid unnecessary audits and increase the transparency of procedures;
- Project monitoring on a regular basis and the establishment of a strong project steering committee;
- Cooperation with existing financial institutions, their involvement in project design, minimal government interference;
- Flexible design and strategic planning;
- A combination of legislative norms and standards and awareness-raising activities is necessary to encourage investments in energy efficiency.

The challenge Tunisia currently faces in terms of improving its IEE is the necessity to harmonize its policies at a higher level to ensure they do not interfere with each other.³⁷ The energy subsidies in place for high energy-intensive industries (up to 5 per cent of GDP, according to the World Bank estimates) have undermined the incentive to implement IEE measures as well as the incentives for industrial enterprises to save energy. The argument in favour of such subsidies was to support national industries and increase their competitiveness, especially of SMEs. The Government of Tunisia will have to find the right balance between subsidies and the promotion of pro-IEE policies in order to sustain the country's industrial growth and increase the national economy's competitiveness.

³⁶ UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT, Energy Efficiency Training and Field Support Toolkit: Tunisia Energy Efficiency Program, <http://eepd.energytoolbox.org/Tunisia.html>

³⁷ WORLD BANK, Tunisia Faces Tough Strategic Choices as Demand for Energy Begins to Outstrip Supply (2016).

Table 3 Policy instruments in Tunisia

		Industrial Energy Efficiency Industrial Policy Instruments/mechanisms		
		Directed at Producer/Manufacturer		Directed at Consumers
		Market-based Interventions/Decentralized Provision	Public Inputs/Direct Provision	
Policy Domain/Market Failure Being Addressed	Product	<p><i>Energy Efficiency: Renewable Energy Provisions (Law 2004/72)</i></p> <p>→ Mandatory energy labelling of products – controlled by the National Agency of Energy Conservation (ANME)</p> <p><i>Cooperation of industrial enterprises with the National Agency of Energy Conservation (ANME) on knowledge transfer in the IEE</i></p> <p>→ Specific focus on capacity-building for SMEs</p>	<p>→ Support of the energy service companies (ESCO) promotion via the project of the World Bank (P078131) in the cooperation with the government of Tunisia</p> <p><i>Establishment of ANME (2004)</i></p> <p>→ Development of new procedures for the implementation of energy efficiency projects.</p> <p>→ Review and assessment. ANME is entitled to monitor the efficiency of support mechanisms and the use of government aid</p>	<p>Raising public awareness about the importance of EE measures in industry by ANME</p>

		Market-based Interventions/Decentralized Provision	Public Inputs/Direct Provision	Directed at Consumers
Policy Domain/Market Failure Being Addressed	Capital	<p><i>Tax exemptions for the import of renewable energy and energy efficiency equipment and materials (Law 94/127)</i></p> <p>→ Exempts certain raw materials and products necessary to achieve energy efficiency from VAT and some import duties.</p> <p><i>Tax exemptions for the import of renewable energy and energy efficiency equipment and materials (Law 2009/7)</i></p> <p>→ Extension of the 1995 tax exemption law and an amendment to the list of raw materials and products that are subject to reduced import duties and exempt from VAT</p>	<p><i>Law 2009/7 on Energy Efficiency: Renewable Energy Provisions</i></p> <p>→ Set of fines to be applied in case of non-compliance with the mandatory elements of laws 2004-72 and 2009-7. The funds generated through these fines are transferred to the Energy Efficiency Fund (FNME) for investments in projects.</p> <p><i>Establishment of Energy Efficiency Fund (FNME) in 2005, managed by ANME.</i></p> <p>Financial support for IEE measures by FNME:</p> <p>→ Energy audit: 70 per cent of the costs with a maximum of TND 30,000.</p> <p>→ Non-material investments: 70 per cent with a maximum of TND 70,000.</p> <p>→ Material investments: 20 per cent – the upper limit is determined by annual energy consumption: TND 100,000 for enterprises that consume less than 4 ktoe; TND 200,000 for those that consume between 4 ktoe to 7 ktoe; and TND 250,000 for those that consume more than 7 ktoe.</p> <p><i>Loans and financial guarantees, other means of financial support from the World Bank, IBRD and UN agencies</i></p> <p>→ Support for energy efficiency projects implemented by enterprises</p> <p>→ Support for the development of ESCOs</p> <p>→ Sustainable partial guarantee fund</p> <p>→ Technical assistance to local financial institutions</p>	

		Market-based Interventions/Decentralized Provision	Public Inputs/Direct Provision	Directed at Consumers
Policy Domain/Market Failure Being Addressed	Labour		<p><i>Energy Efficiency: Renewable Energy Provisions (Law 2004/72)</i></p> <p>→ ANME is responsible for the promotion of training on IEE</p>	
	Technology		<p><i>Energy Efficiency: Renewable Energy Provisions (Law 2004/72)</i></p> <p>→ ANME is responsible for the promotion of research on IEE</p>	

4 Viet Nam's case study: making industrialization competitive

4.1 National development agenda and the driving factors for IEE policies

In the 2000s, the Government of Viet Nam began paying increased attention to industrial energy efficiency (IEE) policies as a result of the country's rapid industrialization.³⁸ From 1998-2008, energy consumption in Viet Nam tripled, with industry primarily driving this increase.³⁹ In 1998, Viet Nam's industrial sector consumed around one-third of final energy, while its energy consumption rose to 48 per cent, and over 50 per cent by 2015.⁴⁰ Structural shifts in the national economy compelled the Government of Viet Nam to set a reduction of energy consumption per unit of GDP ratio as one of the economic targets of the national Sustainable Development Strategy for 2011-2020,⁴¹ as the country remained the most energy-intensive economy in East Asia, lagging behind China, Indonesia, Thailand, Malaysia and the Philippines.⁴²

The Asia-Pacific region has probably been the most rapidly industrializing part of the world during the last quarter century. The fact that Viet Nam is lagging behind the region's other developing nations in terms of the national industry's energy efficiency may be a stimulus for the national government to catch up by introducing proactive policies in this sphere.⁴³ Higher energy intensity of industrial production results in higher production costs for manufactured goods, which affects the competitiveness of national production and thus has implications for FDI as well as for the integration of the national economy in global value chains.

³⁸ VIETNAM NATIONAL ENERGY EFFICIENCY PROGRAMME, Decree No. 102/2003/ND-CP on thrifty and efficient use of energy, Hanoi (2003).

³⁹ VIETNAM NATIONAL ENERGY EFFICIENCY PROGRAMME, Environmental and Social Management Framework, Hanoi (2015).

⁴⁰ ENERGY EFFICIENCY AND CONSERVATION OFFICE, MINISTRY OF INDUSTRY AND TRADE, Policies and Initiatives on Energy Efficiency and Conservation in Vietnam (2015).

⁴¹ VIETNAM SUSTAINABLE DEVELOPMENT STRATEGY FOR 2011-2020, Decision No. 432/QD-TTg (2012).

⁴² WORLD BANK, Vietnam Energy Efficiency for Industrial Enterprises Project (VEEIEs) Project Introduction (2016).

⁴³ ASIA PACIFIC ENERGY RESEARCH CENTRE (APEREC), Compendium of Energy Efficiency Policies of APEC Economies: Vietnam (2012).

The major drivers behind the IEE policy of the Government of Viet Nam were:

- Increased competitiveness of the national economy
- Availability of donor funds for IEE improvements
- Attraction of FDI.

Competitiveness is a key element of progress in the shift from an early to a middle stage of industrialization, and thus plays a major role in national industrial policy.⁴⁴ A gradual shift from labour- to resource-intensive industries requires the efficient use of resources in order to compete with nations that have already reached the middle stage of industrialization.

4.2 Past experiences with IEE policy

Viet Nam's national energy policy and thus the policy efforts in the area of IEE, are to a significant extent determined by the Ministry of Industry and Trade (MOIT) jointly with the General Department of Energy, which is part of the Ministry. The first national Decree on Energy Efficiency and Conservation was issued as early as 2003, specifying the roles of government agencies in the area of energy efficiency, requiring suppliers of energy-consuming equipment to include data on energy consumption in user manuals and to include special labels on the equipment.⁴⁵

The decree was supplemented by the MOIT 2004 circular on the guidance of implementation of energy conservation in the industrial sector (Circular 01/2004/TT/BCN), which established the principles of energy audits and energy management of industrial enterprises. These regulations have been replaced by the more comprehensive Law on Energy Conservation and Energy Efficiency (50/2010/QH12), particularly the chapter on the economic and efficient use of energy in industrial production, which came into force in 2011.

MOIT via its Energy Conservation Office has implemented the National Strategic Programme on Energy Saving and Effective Use (Viet Nam National Energy Efficiency Programme, VNEEP) since 2006. VNEEP became a major milestone for the development of the national strategic vision for IEE improvements. The programme was

⁴⁴ See Weiss, J. UNIDO Taxonomy of Industrial Policy (UNIDO, 2015) for more detail on the stages of industrial policy and associated policy instruments.

⁴⁵ AFD HANOI, Background Papers: Energy Efficiency in Vietnam (2012).

approved on 14 April 2006 (Decision 79/2006/QD-TTG) and was initially set up for two five-year periods: 2006-2010 and 2010-2015. The initial plan was to achieve savings of 3 per cent to 5 per cent of total energy consumption during 2006-2010. This objective was to be achieved in the industrial sector by establishing a model of efficient use and conservation of energy, which was expected to be implemented in 40 per cent of enterprises by 2010.

The government planned to achieve progress in energy efficiency by improving the national legislative system and disseminating relevant information. Two components of the programme focused specifically on IEE:

- Promoting the use of highly energy efficient equipment and supporting the phasing-out of low energy efficient equipment. MOIT planned to achieve this by developing specific standards and introducing energy-saving labels on targeted products. The manufacturers that met the IEE standards would receive technical assistance through programme-supported projects.
- Energy efficiency and conservation in industrial enterprises. Within the scope of this component, MOIT planned to establish a model of supervision over energy savings in industrial enterprises. The government provided assistance to industrial enterprises to upgrade, improve and rationalize their energy efficiency.

4.3 IEE policy instruments in effect

The current IEE policy is being implemented by the Law on Energy Efficiency and Conservation of 2011. According to the law, industrial enterprises must develop annual plans for efficient energy use. The law identifies major types of industrial equipment and processes (e.g. steam boilers; smelting, baking and drying furnaces; heat and cold intensifiers), in which energy savings can be achieved by enterprises, calling for efforts to be undertaken to implement the necessary EE measures, including the use of new technologies and equipment. The law introduced the following measures for the industrial sector:

- mandatory energy labels for industrial appliances and equipment
- mandatory sectoral energy efficiency standards for appliances, equipment, technology and products.

The law became the foundation for the current stage of VNEEP, which is included in the 2012-2015 National Target Programme for Energy Efficiency and Conservation (Decision 1427/QĐ-TTĐ). The programme aims to achieve between 5 per cent and 8 per cent savings of total energy consumption. These savings are based on the difference between actual consumption and the consumption initially projected in the national electricity development plan for 2011-2020 under the business-as-usual scenario as calculated by the Energy Conservation Office of MOIT.⁴⁶

The current phase of the VNEEP entails the cooperation of different government agencies under the general guidance of MOIT. The government agencies cooperating with MOIT on different energy efficiency projects are the Ministry of Construction, the Ministry of Transport, the Ministry of Science and Technology and the Ministry of Agriculture and Rural Development. The combination of expertise possessed by the different ministries is expected to have a synergistic effect on the promotion of various IEE measures.

The programme builds on the first stage of VNEEP and promotes more advanced industry-specific objectives. It focuses on steel, cement and the textile and apparel industries, introducing targets for decreasing energy consumption by 2015 in comparison with 2011. Industries' options are determined by their current level of energy consumption and the prospects of possible energy savings, which can be achieved through the implementation of IEE measures. According to Weiss (2015),⁴⁷ a country's industrial fabric is linked to its level of income. The apparel and textile industry is the foundation of labour-intensive industrialization (early stage industrial policy) and thus corresponds to Viet Nam's current stage of industrial development; the steel and cement industries are often considered cornerstones of resource-intensive industrialization (middle stage industrial policy).

⁴⁶ ENERGY EFFICIENCY AND CONSERVATION OFFICE, MINISTRY OF INDUSTRY AND TRADE, Policies and Initiatives on Energy Efficiency and Conservation in Vietnam (2015).

⁴⁷ WEISS, J. UNIDO Taxonomy of Industrial Policy, UNIDO (2015).

In its sections on industry, VNEEP Phase 2 proposes the following policies:

- specific measures for product labeling and implementation of energy performance standards.
- public support for enterprises implementing IEE measures.
- development of energy management standards and assistance in their implementation with a specific focus on SMEs.

4.4 IEE policy instruments: results and lessons learnt

The implementation of the first and second phase of VNEEP over the last decade has allowed MOIT to accumulate a significant amount of information on the lessons learnt, existing barriers and results achieved. According to MOIT, the main results of the VNEEP by the end of 2015 were:⁴⁸

- Energy audits had been conducted at 300 large enterprises;
- 300 energy audits had been carried out in SMEs and commercial buildings;
- 1,024 designated enterprises had introduced energy management systems;
- 2,500 managers and 200 auditors working in the field of energy obtained certification in energy management;
- By late 2015, the energy savings ranged from 1,750 ktoe to 2,800 ktoe in three sectors (industry, construction, transport). Of these savings, around 50 per cent were estimated to have been achieved in the industrial sector.

According to the Energy Efficiency and Conservation Office of MOIT, the implementation of the Law on Energy Efficiency and Conservation resulted in the following achievements:

- Energy management systems have been established in 250 designated enterprises.
- 350 managers and 60 auditors working in the field of energy obtained certification in energy management.

⁴⁸ ENERGY EFFICIENCY AND CONSERVATION OFFICE, MINISTRY OF INDUSTRY AND TRADE, Policies and Initiatives on Energy Efficiency and Conservation in Vietnam.

- Energy efficiency labeling was awarded to 147 products.
- Energy audits were conducted at 243 enterprises.
- Energy efficiency measures were implemented in 50 enterprises.

The main obstacles to the implementation of VNEEP objectives, identified in MOIT's Environmental and Social Management Framework⁴⁹, were associated with the insufficient financial incentives offered by the government and the lack of access to private financing for the implementation of energy efficiency measures. Another barrier was the lack of accountability in the enforcement of national energy efficiency targets, as energy efficiency was not usually a major priority for industrial enterprises.

The analysis of factors determining the success of the implementation of energy efficiency policies by MOIT and VNEEP revealed the significance of coordination between stakeholders and government agencies and transparent finance allocation.⁵⁰ Another factor was the introduction of tracking, monitoring and assessment of specific elements of the programme and the development of procedures and time frames for the verification of programme results. MOIT and VNEEP also recommended the organization of joint steering committees controlling the implementation of programme goals and setting up clear intermediate targets. Additionally, the recommendation for programme targets based on VNEEP experiences was to make them clear and measurable in order to improve the efficiency of the system of control over their implementation.

⁴⁹ VIETNAM NATIONAL ENERGY EFFICIENCY PROGRAMME, Environmental and Social Management Framework, Hanoi (2015).

⁵⁰ HANH D.H., QUANG V.V., PAHUJA N. Viet Nam: Implementing a national energy efficiency programme (2015).

Table 4 Policy instruments in Viet Nam

		Industrial Energy Efficiency Industrial Policy Instruments/Mechanisms		
		Directed at Producer/Manufacturer		Directed at Consumer
		Market-based Interventions/Decentralized Provision	Public Inputs/Direct Provision	
Policy Domain/Market Failure Being Addressed	Product	<p><i>Law on Energy Saving and Efficiency (No. 50/2010/QH12)</i> → Introducing mandatory energy labels for industrial appliances and equipment</p>	<p><i>National Energy Efficiency Programme (VNEEP)</i> → Conducting energy audits in large enterprises and power plants → Conducting energy audits in SMEs and commercial buildings → Introducing energy management systems in designated enterprises</p> <p><i>VNEEP Environmental and Social Management Framework (jointly with World Bank and IBRD)</i> → Technical Assistance and Capacity Building for Improving Energy Efficiency</p> <p><i>Pilot Commercial Energy Efficiency Programme</i> → Marketing to promote energy efficiency measures</p>	<p><i>National Target Programme on Efficient Use and Saving Energy (EUSE), Decision 79/2006/QD-TTG</i> and <i>VNEEP Phases 1, 2</i> → Awareness raising of energy efficiency for the general public and employees of industrial enterprises → Developing and popularizing high efficiency and energy saving products</p>

Policy Domain/Market Failure Being Addressed	Market-based Interventions/Decentralized Provision			Public Inputs/Direct Provision	Directed at Consumer
	Capital	<p><i>Decree 21/2011/ND-CP on the Law on Economic and Efficient Use of Energy and Measures for its Implementation</i></p> <p>→ Establishment of the national target programme on the economic and efficient use of energy. Energy efficiency projects are eligible for financial support from National Target Programmes</p> <p><i>VNEEP Environmental and Social Management Framework (jointly with the World Bank and IBRD)</i></p> <p>→ Energy Efficiency Investment Lending (jointly with IBRD, participating financial institutions, industrial enterprises)</p>	<p><i>VNEEP Environmental and Social Management Framework</i></p> <p>→ Advisory services of IFC to Vietinbank on IEE financing and working with the World Bank on the identification of suitable support capacity mechanisms</p> <p><i>Pilot Commercial Energy Efficiency Programme</i></p> <p>→ Energy audit and efficiency investment grants to enable individual businesses to invest in EE and overcome barriers when adopting energy efficient business services</p> <p><i>Loans and other means of financial support from the IBRD, World Bank, ADB and other international bodies</i></p>		
Labour		<p><i>VNEEP</i></p> <p>→ Certification of energy managers and auditors on energy management systems</p> <p>→ Dissemination and awareness raising on energy efficiency and conservation</p> <p>→ Embed educational programmes on energy efficiency and conservation in the national education system</p> <p><i>Pilot Commercial Energy Efficiency Programme</i></p> <p>→ Training project for the staff of industrial enterprises and funding agencies to promote energy efficient commercial services and technical assistance to support the completion of energy efficiency investment projects</p>	<p><i>Decree 21/2011/ND-CP on the Law on Economical and Efficient Use of Energy and Measures for its Implementation</i></p> <p>→ Promote the development of education for the employees of industrial enterprises and consultancy services in the energy industry for the efficient implementation of national energy efficiency goals</p>		

Policy Domain/Market Failure Being Addressed	Technology	Market-based Interventions/Decentralized Provision	Public Inputs/Direct Provision	Directed at Consumer
			<p><i>Law on Energy Saving and Efficiency (No. 50/2010/QH12)</i></p> <p>Required introduction of</p> <ul style="list-style-type: none"> → Mandatory energy labels for appliances and equipment → Mandatory sectoral energy efficiency standards for appliances, equipment, technology and products → Energy efficiency requirements in building codes and construction practices <p><i>VNEEP</i></p> <ul style="list-style-type: none"> → Establishing mandatory energy labels and mandatory efficiency standards for appliances, equipment, technology and products → Providing technical assistance to manufacturers, assembly factories, importers, retailers of high-performance products and to testing laboratories of energy performance in the country → Developing energy management standards and models for energy using facilities → Support for businesses in the application of standards, technical norms, improving performance for better energy efficiency and conservation 	

5 Moldova’s case study: energy ‘delivered safely, used efficiently’ for economic growth

5.1 National development agenda and drivers of IEE policies

In the National Development Strategy (NDS) ‘Moldova-2020’ (2012), the Government of Moldova emphasizes energy efficiency and energy security as key factors promoting economic growth and reducing poverty in the country. According to the NDS, the major challenge for the local economy is the extremely low level of energy efficiency—up to three times lower than in EU countries—which undermines the local industry’s competitiveness. The factors affecting Moldova’s energy efficiency are its outdated technologies and equipment and the lack of knowledge and skills necessary to implement energy efficiency measures.⁵¹

The long-term framework for the promotion of development in the field of energy is defined in the ‘Energy Strategy of Moldova by 2030’, which was approved in 2013.⁵² The objective of Moldova’s energy strategy is to reduce the national economy’s energy intensity by 10 per cent and its greenhouse gas (GHG) emissions by 25 per cent by 2020 (to the 1990 level). Setting these ambitious goals in the NDS and the Energy Strategy, which focus on energy efficiency and energy security, are seen as the ‘two pillars’ of the energy industry’s national strategic vision.⁵³

Both Moldova 2020 and Moldova’s Energy Strategy 2030 identify energy security as a key challenge for Moldova’s economy, as up to 95 per cent of its energy resources are imported, mostly consisting of natural gas from a single foreign source. Such dependence makes Moldova’s economy vulnerable to energy price volatility as well as political risks, which has implications for the development of the national industry. Additionally, according to Energy Research to Innovation 2014 estimates, the country’s industry is the second largest consumer of energy (21 per cent of total consumption), which implies that significant opportunities for energy efficiency improvements exist in the industry.⁵⁴ Specifically, in 2001-2007, the energy intensity of industrial production decreased by nearly twice and still has major potential for improvements and

⁵¹ NATIONAL DEVELOPMENT STRATEGY, Moldova 2020: 7 Solutions for Economic Growth and Poverty Reduction (2020).

⁵² ENERGY STRATEGY of the Republic of Moldova until 2030 (2013).

⁵³ NATIONAL DEVELOPMENT STRATEGY, Moldova 2020: 7 Solutions for Economic Growth and Poverty Reduction (2020).

⁵⁴ ENERGY RESEARCH TO INNOVATION, Energy Sector in the Republic of Moldova (2014).

consequently energy savings at national level. Higher energy use per unit of production in industry also affects the economy's competitiveness and putting upward pressure on production costs. Considering the national industry's high energy savings potential identified by the government, it may be one of the drivers of economic growth.

Another approach towards national strategic efforts is strengthening the cooperation with the EU. According to the NDS, this implies integration in the European energy market and closer collaboration with European authorities to improve national energy security.⁵⁵ It also entails undertaking efforts to comply with European standards in the area of energy efficiency. Consequently, Moldova joined the Energy Community Treaty, which extends the EU energy market to the countries of Southeast Europe by establishing a legally binding framework. Moldova's Energy Strategy 2030 includes targets and commitments to energy efficiency and energy security based on the Energy Community Treaty. According to an analysis of the national strategic agenda, the following factors are deemed major drivers of energy efficiency policy:

- Energy security
- Increased competitiveness of the national economy
- Cooperation with the EU.

5.2 Custodians of IEE policy and past experience with IEE

Energy efficiency formally became one of the government's objectives in 2010, when the Law on Energy Efficiency was introduced. The law incorporated elements of EU policy from Directive 2006/32/EC on energy efficiency and services, and was in line with the country's strategy on broader cooperation with the EU, which culminated in the Moldova-European Union Association Agreement signed in 2014 (the agreement entered into force on 1 July 2016). The most important component of the Association Agreement was the EU's pledge to assist Moldova in modernizing its energy infrastructure.

The Law on Energy Efficiency introduced the legal framework for the country's efforts in the field of energy, specifically, the concept of energy service companies (ESCO), and called for third party financing of energy efficiency projects. One important element

⁵⁵ NATIONAL DEVELOPMENT STRATEGY, Moldova 2020: 7 Solutions for Economic Growth and Poverty Reduction (2020).

of the law is the dissemination of information, as the low level of knowledge among industry stakeholders about the benefits associated with energy efficiency improvements was one of the factors determined by the government as limiting progress in this field. The government planned to establish an efficient monitoring system of energy consumption and to support training of decision-makers so they could gain access to advanced technologies, scientific innovation and advanced experience in the field of energy efficiency. This was to be achieved through intensified international cooperation – primarily with the EU, but also with other developed nations, multilateral organizations and development banks.⁵⁶

The Association Agreement with the EU became the logical continuation of this policy focused on energy efficiency improvements through international aid and cooperation. The EU promised to help Moldova with the development of energy efficiency policies and strategies and to promote scientific and technical cooperation and exchange of information to improve the energy efficiency of Moldova's industry. Moldova agreed to transpose EU legislative and regulatory documents on energy efficiency in its legal system.⁵⁷ As part of these efforts, Moldova adopted the law on labelling of energy-related products in 2014.⁵⁸

Energy policy was initially within the sphere of responsibility of the Ministry of Energy. Following its dissolution, the Ministry of Industry and Infrastructure assumed the Ministry of Energy's responsibilities. The Ministry of Industry and Infrastructure was also dissolved and its functions transferred to the Ministry of Economy, which is now responsible for industrial and energy policies. The office responsible for energy efficiency policy is the Agency for Energy Efficiency (AEE), which was created through the reorganization of the National Agency for Energy Conservation. The AEE was formally established by the Law on Energy Efficiency in 2010.⁵⁹

5.3 IEE policy instruments in effect

The National Energy Efficiency Programme (NEEP) (2011-2020) was adopted in 2011 and included the issue of energy efficiency, and later became part of the national Energy

⁵⁶ ENERGY RESEARCH TO INNOVATION, Energy Sector in the Republic of Moldova (2014).

⁵⁷ ENERGY CHARTER, In-Depth Review of the Energy Efficiency Policy of Moldova (2015).

⁵⁸ ENERGY COMMUNITY, Moldova Energy Efficiency Priorities 2016 – 2017.

⁵⁹ ENERGY RESEARCH TO INNOVATION, Energy Sector in the Republic of Moldova (2014).

Strategy by 2030. The programme calls for increased efficiency of total primary energy consumption by 20 per cent by 2020 and a reduction of GHG emissions by 25 per cent by 2020 in comparison to the 1990 level. These goals are to be achieved by metering natural gas consumption by 100 per cent by 2020, which should stimulate energy consumers to use more energy efficient technologies, train energy managers and set requirements for energy-related products on environmental and energy performance. According to the estimates of the Energy Charter (2015), the full-scale implementation of NEEP implied annual energy savings of 1.8 per cent, and a total of 9 per cent energy savings by 2016, contributing to reductions in GHG emissions of 323 637.5 tons.⁶⁰

The NEEP called for the establishment of voluntary agreements for energy-intensive industries and created the Energy Efficiency Fund (EEF). The government sought to attract foreign donor funding for the EEF and to provide 10 per cent of the amount contributed to EEF by donors from the state budget. The EEF provides financial support to producers in the form of grants, loans, leasing and financial guarantees. The requirements for projects funded through the EEF are as follows: the project beneficiary's own contribution should be at least 20 per cent of the total costs, and the payback period for energy efficiency projects should be limited to 7 years (for projects on renewable energy sources, this period is extended to 15 years). By early 2015, the EEF had approved 169 projects.⁶¹

To implement the NEEP goals, the Government of Moldova uses the National Action Plan for Energy Efficiency (NEEAP).⁶² The Plan for 2013-2015 aimed to reduce the national economy's final energy consumption by 428 ktoe. This result was expected to be achieved through the following measures:

- Modernization and modifications in the industrial sector to achieve energy savings in the amount of 15.9 ktoe in 2015, 26.5 ktoe in 2016 and 47.75 ktoe in 2020.⁶³ This measure was to be promoted through EEF projects and cooperation with the EBRD.

⁶⁰ ENERGY CHARTER, In-Depth Review of the Energy Efficiency Policy of Moldova (2015).

⁶¹ ENERGY CHARTER, In-Depth Review of the Energy Efficiency Policy of Moldova (2015).

⁶² NATIONAL ENERGY EFFICIENCY ACTION PLAN FOR 2013-2015 (2013).

⁶³ ENERGY CHARTER, In-Depth Review of the Energy Efficiency Policy of Moldova (2015).

- Introduction of energy management systems (EnMS) and of the best available technologies and practices in industry. This measure was promoted through the implementation of UNIDO's project 'Reducing Greenhouse Gas Emissions through Improved Energy Efficiency in the Industrial Sector in Moldova' focusing on the promotion of ISO 50001 standards.
- Development of the energy services market for the national economy's industrial sector. This measure was implemented by the AEE and the Ministry of Environment with funding provided from the GEF project.

5.4 IEE policy instruments: barriers and lessons learnt

The comprehensive analysis of Moldova's energy efficiency policy carried out by Energy Charter revealed that limited financing was one of the major barriers for successful implementation.⁶⁴ A possible solution for this is the introduction of long-term sustainable financing mechanisms in the field of industrial energy efficiency. One specific recommendation for the EEF was to reduce the grant component in its portfolio and focus on loans with interest rates below the market level.

Another factor affecting energy efficiency improvements is the level of knowledge and competence of public officials, specifically, their ability to choose the best available products, services or technologies, e.g. in public tenders. The government can explore different types of financial incentives to determine which ones may be optimal for various industries and improve cooperation with international development agencies and donors for the optimal allocation of resources. Increased progress in IEE can be achieved through the establishment of specific targets for various industries. Additional investment in EE projects can be attracted if the stability of the legislative framework is secured.

Reports of Energy Charter (2015) and Energy Research to Innovation (2014) agree that the main obstacle for the implementation of EE measures at the enterprise level is the lack of information about the associated benefits of EE and, in general, a lack of qualified professionals, specifically, energy auditors, technicians and other energy experts, who are able to assist local enterprises in improving their EE performance. According to Energy Research to Innovation, IEE has a lower priority for local

⁶⁴ ENERGY CHARTER, In-Depth Review of the Energy Efficiency Policy of Moldova (2015).

enterprises, which usually choose equipment based on price only, not energy performance.⁶⁵ Therefore, efforts to implement EnMS in industry as well as associated training of staff from enterprises, especially SMEs, are crucial. The government can promote compulsory energy audits and benchmarking, as well as cooperate with industrial producers associations for enhanced implementation of EE policies. Energy efficiency measures at enterprises can be stimulated through the simplified certification of EE companies, simplified investment procedures for EE projects and targeted support of energy audits.

⁶⁵ ENERGY RESEARCH TO INNOVATION, Energy Sector in the Republic of Moldova (2014).

Table 5 Policy instruments in Moldova

		Industrial Energy Efficiency Policy Instruments/Mechanisms		
		Directed at Producer/Manufacturer		Directed at Consumer
		Market-based Interventions/Decentralized Provision	Public Inputs/Direct Provision	
Policy Domain/Market Failure Being Addressed	Product	<p><i>National Energy Efficiency Programme (NEEP) 2011-2020</i></p> <ul style="list-style-type: none"> → Creating conditions for the development of energy service companies (ESCOs) by providing economic incentives (performance contracts) → Creating conditions for public-private partnership, including the establishment of an appropriate legislative framework → Elaborating and proposing voluntary agreements for energy-intensive industries 	<p><i>National Energy Efficiency Programme (NEEP) 2011-2020</i></p> <ul style="list-style-type: none"> → Providing 100 per cent metering of natural gas consumption by 2020 → Continued installation of heat metering devices and heat metering in 100 per cent of buildings in Moldova by 2016 <p><i>National Energy Efficiency Action Plan</i></p> <ul style="list-style-type: none"> → Modernization and modification of the industrial sector 	<p><i>Law on Energy Efficiency (2010)</i></p> <ul style="list-style-type: none"> → Awareness-raising and involvement of civil society in decision-making processes and implementation of energy efficiency improvement measures
		<p><i>Law on Energy Efficiency (2010)</i></p> <ul style="list-style-type: none"> → Promoting private initiatives and the development of energy service companies (ESCO) that are to contribute to the optimization of energy systems operation and use, based on energy performance contracts <p><i>Law on labelling of energy-related products (2014)</i></p> <ul style="list-style-type: none"> → mandatory labeling of energy-related products 	<p><i>Law on Energy Efficiency (2010)</i></p> <ul style="list-style-type: none"> → Promoting energy efficiency by supporting energy efficiency improvement programmes. These programmes promote the implementation of advanced energy and fuel-based technologies in energy generation, distribution, transportation and consumption by introducing energy efficiency standards for installations, buildings, machinery and equipment, and by controlling compliance with these standards <p><i>The Association Agreement between the European Union and Moldova (2014)</i></p> <ul style="list-style-type: none"> → The EU agreed to cooperate and help Moldova in the development of energy strategies and policies 	

Policy Domain/Market Failure Being Addressed	Capital	Market-based Interventions/Decentralized Provision	Public Inputs/Direct Provision	Directed at Consumer
		<p><i>National Energy Efficiency Programme (NEEP) 2011-2020</i> → Creating conditions for the development of energy service companies (ESCOs) by providing economic incentives (performance contracts)</p> <p><i>National Energy Efficiency Action Plan 2013-2015</i> → Developing an energy services market for the national economy's industrial sector (supported by the GEF project)</p> <p><i>Funding from EBRD</i> → Financial support for projects on modernization and modification in the industrial sector</p>	<p><i>National Energy Efficiency Action Plan 2013-2015</i> → Funding tools for energy efficiency projects within the industrial sector by setting a dedicated credit line. → Special grant component from government funds - 5 per cent to 20 per cent of project costs. → Credits are provided for investments into energy saving technologies or for the employment of renewable energy sources.</p> <p><i>Funding via Energy Efficiency Fund (EEF)</i> → Providing 10 per cent from the state budget of the amount contributed to EEF by donors → Requirements for projects funded through EEF:</p> <ul style="list-style-type: none"> • own contribution by the project beneficiary should be at least 20 per cent of the total costs • the payback period for energy efficiency projects should be 7 years 	

Policy Domain/Market Failure Being Addressed		Market-based Interventions/Decentralized Provision	Public Inputs/Direct Provision	Directed at Consumer
	Labour	<p><i>Law on Energy Efficiency (2010)</i></p> <p>→ Supporting cooperation between energy producers, transporters, distributors, suppliers and consumers to ensure correlation of their interests and to realize the state's policy energy efficiency goals</p> <p>→ Cooperation with other countries to promote advanced technologies, implementation of scientific innovation and advanced experience in the field of energy consumption</p>	<p><i>National Energy Efficiency Programme (NEEP) 2011-2020</i></p> <p>→ Training of energy managers to monitor energy consumption in the public sector</p> <p><i>Law on Energy Efficiency (2010)</i></p> <p>→ Training of decision-makers at all levels to identify and implement energy efficiency measures</p> <p>→ Information on support for energy efficiency activities, including public dissemination of information on initialization, realization, costs and benefits of projects that significantly reduce energy intensity and environmental impact</p> <p><i>UNIDO project 'Reducing Greenhouse Gas Emissions through Improved Energy Efficiency in the Industrial Sector in Moldova'</i></p> <p>→ Promotion of the ISO 50001 standard through the organization of trainings for employees of industrial enterprises</p>	

Policy Domain/Market Failure Being Addressed	Technology	Market-based Interventions/Decentralized Provision	Public Inputs/Direct Provision	Directed at Consumer
		<p><i>National Energy Efficiency Programme (NEEP) 2011-2020</i></p> <ul style="list-style-type: none"> → Setting energy and environmental performance requirements for energy-related products used by consumers → Introduction of energy management systems (EnMS) and best available technologies and practices in industry 	<p><i>Association Agreement between the European Union and Moldova (2014)</i></p> <p>EU agreed to cooperate with Moldova in:</p> <ul style="list-style-type: none"> → Promotion of energy efficiency and energy savings, on energy performance of buildings, and the development and support of renewable energies in an economic and environmentally sound manner → Reduction of GHG emissions, including energy efficiency and renewable energy projects → Scientific and technical cooperation and exchange of information for the development and improvement of technologies in energy production, transportation, supply and end use, with particular attention on energy-efficient and environmentally friendly technologies <p><i>National Energy Efficiency Programme (NEEP) 2011-2020</i></p> <ul style="list-style-type: none"> → Promotion of electricity production in cogeneration mode as being more efficient than the separate generation of electricity and heat. The annual overall efficiency of new CHPs should be no less than 80 per cent and electric efficiency should be 45 per cent to 50 per cent → Launch in 2012 of individual and buildings' boilers inspection 	

6 Conclusions

6.1 Why energy efficiency?

It has been observed that many governments have increasingly been focusing on energy efficiency investments over the last two decades. Our analysis suggests that there are three main reasons why governments are keen to fund energy efficiency programmes:

1. To reduce their domestic dependence on imported energy sources. Any country that is a net energy importer embraces measures that help reduce its dependence, even when oil prices are around USD 45 per barrel, which is the lowest we have seen in a decade.
2. To boost their economy by creating new jobs and opening new business opportunities. After the economic crisis of 2008/2009, we witnessed increased public investment by developed countries in energy efficiency programmes as a way to stimulate the economy.
3. To reduce carbon emissions associated with energy use. Globally, energy efficiency could potentially reduce greenhouse gases by 40 per cent at a cost of less than EUR 60 per metric ton of CO₂ equivalent⁶⁶.

The Paris Agreement was adopted in 2015 and ratified by 153 parties. It entered into force in 2016 aims to keep the rise of this century's global temperature well below 2 degrees Celsius above pre-industrial levels and to undertake efforts to limit the increase in temperature even further to 1.5 degrees Celsius. Unlike the Kyoto Protocol, the Paris Agreement gives responsibility to all parties, irrespective of income level, to combat climate change through "nationally determined contributions" and to regularly report on their rate of emissions and implementation efforts. This reflects Sustainable Development Goal 13 "Take urgent action to combat climate change and its impacts". Given the high GHG abatement potential, the low cost associated with energy efficiency and the fact that plenty of aid is available for mitigating climate change, it is no surprise that countries view energy efficiency as a low hanging fruit in their decarbonization efforts.

⁶⁶ globalghgcostcurve.bymckinsey.com

This working paper focuses on improvements in industrial energy efficiency. We sought to understand whether the same three drivers of industrial energy efficiency apply in different country contexts.

6.2 Why industrial energy efficiency?

Looking at 2014 IEA figures, we find that the manufacturing industry accounted for 28 per cent of final energy consumption⁶⁷. Looking further afield, BP's Energy Outlook 2017⁶⁸, predicts that global energy consumption will increase by nearly 30 per cent by 2035, with industry and the building sector being the largest markets for final energy consumption and accounting for the majority of growth in energy demand. With a dwindling share of fossil fuels and rising share of renewable sources (quadrupling over the next 20 years) in the fuel mix, energy prices are being pushed upward. For manufacturing, this translates into increased costs for production, logistics and energy-intensive commodities. The Energy Outlook also predicts a move away from energy-intensive industries, especially in China and India. Hence, not only do energy efficiency savings in the manufacturing sector contribute to a direct decrease in the dependence of net energy importers on energy imports, but also improves the sector's competitiveness in terms of direct and indirect costs savings.

Energy accounts for about 5 per cent of costs of an average manufacturing company, and is higher in energy-intensive industries. An energy-efficiency programme can save between 10 per cent and 30 per cent of those energy costs within three years⁶⁹. Indirect savings from reduced maintenance, materials, waste and risk increase the benefits, combining to effectively cut direct energy costs by about half. Tax reductions and government incentives further boost the savings in many countries. Most savings are generated from adapting equipment and processes. In production, typical efficiency measures include more effective motors, drives, boilers, furnaces, pumps, compressors and ventilation and heating systems. Energy recovery systems can help reduce demand. A plan to use energy flexibly, reducing usage during peak times, results in even more savings.

⁶⁷ Own calculations based on data extracted on 06 July 2017 from IEA's Extended Energy database.

⁶⁸ <http://www.bp.com/content/dam/bp/pdf/energy-economics/energy-outlook-2017/bp-energy-outlook-2017.pdf>

⁶⁹ [Oliver Straehle](#), [Kim Petrick](#), Fabian Stierli and Adrien Bro, 2013, Hidden treasure: Why energy efficiency deserves a second look, Bain Brief.

From the government's perspective, promoting industrial energy efficiency measures endorses the goals of SDG 9 "Promote sustainable industrialization" and SDG 12 "Ensure sustainable consumption and production patterns" in addition to SDG 13 on climate action as already discussed.

The manufacturing industry contributes an estimated 20 per cent of total CO₂ emissions. This is surpassed by far by the energy industry at 40 per cent and the transport industry at 23 per cent⁷⁰. While numerous efforts to reduce CO₂ emissions are required to meet the CO₂ emissions target, the question remains whether investments in industrial energy efficiency programmes for the sake of reducing CO₂ emissions only will have as significant an impact as targeting CO₂ reduction programmes in the energy industry. This is an important decision for the government of any country.

Nonetheless, energy efficiency represents the main path to lower carbon intensity⁷¹. Hence, at the firm level, investments in energy efficiency improvements are fully justified. This is particularly the case for energy-intensive manufacturing firms which can benefit from the double dividend of achieving substantial direct and indirect costs savings as well as generating revenues by trading their carbon offsets on the carbon market. It should be noted, however, that CO₂ prices are among their lowest in Europe at around EUR 5 per ton of CO₂ equivalent.

In addition to the benefits mentioned above, firms that engage in industrial energy efficiency improvements comply with regulatory requirements, can seek new business opportunities and fulfill corporate social responsibilities. Energy regulations for commercial and industrial companies are on the rise, and there is some evidence that demand for commercial (elevators, electric drives, electric transmission equipment and pumps) and consumer products (air conditioners, refrigerators, washing machines, light bulbs and cars) that use energy efficiently is also increasing. Companies with a culture of energy efficiency are bound to take the lead – not only in how they use energy but also in the products and services they develop. Energy efficiency champions often report an increased potential for innovation among their organizations. Some discover new business models that help other companies and consumers become more energy

⁷⁰ Own calculations based on data extracted on 06 July 2017 from the IEA's Detailed CO₂ estimates database.

⁷¹ World Energy Outlook, 2016, IEA.

efficient. Reducing energy consumption demonstrates good corporate citizenship, strengthening corporate image and contributing to sales. Firms have realized that a long-term sustainability strategy can make them more attractive to investors and suppliers. Hence, in addition to government-driven policy measures for industrial energy improvements, we also find that many such measures are market-driven and introduced voluntarily.

6.3 Why the need to address industrial energy efficiency in industrial policies?

Many countries believe that energy efficiency policies form part of the broader spectrum of environmental policies and therefore fall under the remit of the Ministry of Environment. While it is good to pursue a holistic, consultative and participatory approach to policy making, our case studies reveal that the Ministry of Industry plays an active role in defining such policies for their constituents, namely manufacturing firms.

CO₂ market prices are artificially low at around EUR 5 per ton of CO₂ equivalent in 2017. Experts assert that the price of carbon dioxide should be around USD 30 per ton, rising by roughly 5 per cent a year, in order to make a real difference⁷². Moreover, the currently low oil prices represent a risk for the effective implementation of industrial energy efficiency programmes despite their broader scope and reach. The economic attractiveness of saving energy and investing in energy efficiency decreases when energy prices are low. This is a market failure that needs to be addressed if the emissions trading system is to work properly and if we are to achieve our aim of keeping the temperature from rising to less than 2 degrees Celsius above the pre-industrial level.

Firms are in favour of industrial energy efficiency measures to reduce their direct and indirect energy costs and to improve their competitiveness. Industrial energy efficiency is a clear cut measure to decouple economic growth from environmental degradation. Nonetheless, according to IEA, industrial energy efficiency is below its technologically feasible and economically optimum potential for reducing CO₂ emissions. Industrial policies can thus be key to increasing the uptake of industrial energy efficiency programmes.

⁷² Europe Needs a Higher Price on Carbon, Feb 2017, Bloomberg.

6.4 Policy lessons gleaned from our four case studies

This working paper has reviewed the industrial energy efficiency policy measures implemented in four developing countries, Colombia, Tunisia, Viet Nam and Moldova. The most common policy implemented is the introduction of minimum energy performance standards through gradual, time defined and compulsory efficiency targets with sanctions for firms that disregard them and obliging firms to implement energy efficiency programmes to ensure compliance. This is complemented by regular audits of energy management at energy-intensive firms. Audits are regularly carried out by energy service companies (ESCOs) and their establishment has generated a new line of manufacturing-related services. The carrot in this “carrot and stick” approach to policy is the introduction of energy tax/eco-tax together with a tax relief for companies that implement energy efficiency management systems in line with ISO 50001/EN 16001 certification and meet annual energy savings targets. Hence, we also find several targeted financial incentives in the form of tax rebates, loan guarantees or subsidies. We also find industry-wide voluntary schemes, especially when it comes to energy labelling. Significant efforts have been made to introduce policies geared towards awareness raising and training across the entire spectrum of stakeholders from decision makers, technical staff, consumers and the public at large.

Table 6 provides a summary of the main IEE policy instruments identified in the case studies. More can certainly be done in the area of price signaling, especially as regards the phasing out of fossil fuel subsidies and making participation in public tenders subject to energy efficiency standards being met. If we abstract high level policy recommendations from the lessons gleaned from the four case studies, the following are of significance:

- Keeping the policy instruments simple with transparent procedures;
- Making adequate provision for financial resources when designing policy instruments;
- Harmonizing policies at higher level to ensure they do not interfere with each other;
- Coordinating between stakeholders and government agencies when it comes to designing, understanding and implementing of policy instruments.

Table 6 4x3 matrix classification for IP measures targeting IEE

		Industrial Energy Efficiency Industrial Policy Instruments/Mechanisms		
		Directed at Producer/Manufacturer		Directed at Consumer
		Market-based Interventions/Decentralized Provision	Public Inputs/Direct Provision	
Policy Domain/Market Failure Being Addressed	Product	<p>→ Energy efficiency labels & seal of excellence for industrial appliances and equipment and energy-related products</p> <p>→ Elaborating and proposing industry-wide schemes of voluntary agreements for energy-intensive industries</p> <p>→ Promoting private initiative and the development of energy service companies (ESCO)</p>	<p>→ Creating conditions for public-private partnerships and competitive tenders favourable to energy efficiency</p> <p>→ Establishment of an appropriate legislative framework:</p> <ul style="list-style-type: none"> • Introducing minimum energy performance standards for installations, buildings, machinery and equipment by establishing protocols and system optimization, labelling systems, control and decommissioning • Establishing intensity indicators – goals for IEE for public-private partnerships • Mandatory energy management systems and energy audits <p>→ Development of energy strategies and policies such as Sectoral Mitigation Action Plans (SMAPs), e.g.:</p> <ul style="list-style-type: none"> • Institutional strengthening through the creation of an agreement or framework for energy efficiency to support EE projects and initiatives. • Issuing EE technical regulations • Creating an EE fund to support projects in small and medium enterprises <p>→ Development of Nationally Appropriate Mitigation Actions (NAMAs) for EE in industry, e.g.:</p> <ul style="list-style-type: none"> • Implement and operate pilot projects in the industrial sector, including best operative energy practices (BOPs), process and technology reconversion, innovation and adaptation projects • Knowledge management for the replication of the technology transfer pilot projects’ impact in the industrial sector • Monitoring, learning, adaptive feedback and evaluation <p>→ Establishment of a National Energy Efficiency Agency to develop new procedures for the implementation, review and assessment of energy efficiency projects</p>	<p>→ Promoting information policies – awareness-raising on EE measures in industry and EE consumer goods.</p> <p>→ Involvement of civil society in decision-making processes and in the implementation of energy efficiency improvement measures</p>

		Market-based Interventions/Decentralized Provision	Public Inputs/Direct Provision	Directed at Consumer
Policy Domain/Market Failure Being Addressed	Capital	<p>→ Financial support for IEE measures and energy audits</p> <p>→ Financial support for material & non-material investments for the modernization and modification of the industrial sector based on the energy audit recommendations in the form of:</p> <ul style="list-style-type: none"> • Energy Efficiency Investment Lending • systems of guarantees for SMEs • Tax exemptions or deductions • Reduced import duties for the import of renewable energy and energy efficiency equipment materials • Concessional rates – promotion of existing credit lines and creation of new lines • Free energy audits for SMEs • Sustainable partial guarantee fund <p>→ Use of performance contracts to create conditions for the development of the energy services market in the form of Energy Service Companies (ESCOs)</p>	<p>→ Project funding and loans, other means of financial support from the GEF, Inter-American Development Bank, UN agencies and other international bodies</p> <p>→ Energy efficiency projects are eligible for government financial support through a special grant covering 5 per cent to 20 per cent of project costs.</p> <p>→ Setting of fines to be applied in case of non-compliance with the mandatory elements of laws. Funds generated by means of these fines are transferred to EE projects.</p> <p>→ Technical assistance to local financial institutions</p>	

		Market-based Interventions/Decentralized Provision	Public Inputs/Direct Provision	Directed at Consumer
Policy Domain/Market Failure Being Addressed	Labour	<p>→ Established to raise awareness, train and disseminate energy management systems (EnMS), focused on developing technical capacities.</p> <p>→ Creating the role of energy managers in industries to monitor energy consumption</p> <p>→ Training of decision-makers at all levels to identify and implement energy efficiency measures</p> <p>→ Promotion of ISO 50001 standards through the organization of trainings for employees of industrial enterprises</p>	<p>→ Cooperation of industrial enterprises with the National Energy Efficiency Agency on knowledge transfer in IEE with specific focus on capacity-building for SMEs</p> <p>→ National certification of energy managers and auditors on energy management systems</p> <p>→ Training project for the staff of industrial enterprises and funding agencies to promote energy efficient commercial services and technical assistance to support the completion of energy efficiency investment projects</p> <p>→ Promoting the development of education for employees of industrial enterprises and consultancy services in the energy industry for the efficient implementation of national energy efficiency goals</p>	<p>→ Embed educational programmes on energy efficiency and conservation in the national education system</p> <p>→ Dissemination and awareness raising on energy efficiency and conservation for the public</p>

		Market-based Interventions/Decentralized Provision	Public Inputs/Direct Provision	Directed at Consumer
Policy Domain/Market Failure Being Addressed	Technology	<ul style="list-style-type: none"> → Implementation of ISO 50001 standards → Implementation of energy savings goals within the framework of EnMS and monitoring schemes → Introduction of energy management systems (EnMS) and best available technologies and practices in industry → Modernization and modification of the industrial sector for EE → Information support of energy efficiency activities in industries, including public dissemination of information on initialization, realization, costs and benefits of projects significantly reducing energy intensity and environmental impact → Supporting cooperation between energy producers, transporters, distributors, suppliers and consumers to ensure correlation of their interests and to realize the state policy's energy efficiency goals 	<ul style="list-style-type: none"> → Identification of specific technologies to help achieve EE targets → The National Agency for Energy Efficiency is responsible for the promotion of research on IEE → Creating the seal of excellence for industrial appliances and equipment and energy-related products in accordance with energy efficiency regulations → International knowledge exchange and national knowledge networks. Knowledge sharing via business conferences and market studies → Creating a database of the energy efficiency measures implemented by enterprises for improved sharing of the information → Cooperation with other countries aimed at the promotion of advanced technologies, implementation of scientific innovation and of advanced experience in the field of energy consumption 	



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