Danish Energy Agency

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EMBASSY OF DENMARK

Template of provincial EE plan.

Guideline for DOIT on their development of provincial EE programs and plans.

June 2019

Vets Energy

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energy people

The Guideline is established to support the Department of Industry and Trade (DOIT) in its development of provincial Energy Efficiency (EE) programs and plans according to the Decision 280 dated 13th March 2019 "On approval of the National Energy Efficiency and Conservation Program for the 2019 – 2030 period".

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ABBREVIATIONS

ABBREVIATIONS	IN DETAILS
BAT	Best Available Technology
DARD	Department of Agriculture and Rural development
EESD	Department of Energy Efficiency and Sustainable Development
DEU	Designated Energy User
DIC	Department of Information and Communications
DOC	Department of Construction
DOF	Department of Finance
DOIT	Department of Industry and Trade
DONRE	Department of Natural Resources and Environment
DOST	Department of Science and Technology
DOT	Department of Transports
DPI	Department of Planning and Investment
EE	Energy Efficiency
EEAP	Energy Efficiency Action Plan
EE&C	Energy Efficiency & Conservation
ENs	Enterprises
EVN	Viet Nam Electricity
GSO	General Statistic Office
MOIT	Ministry of Industry and Trade
RE	Renewable Energy
PPC	Provincial People's Committee
PPP	Public - Private Partnership
PPDP	Provincial Power Development Planning
PVN	Petrol Viet Nam
SEC	Specific Energy Consumption
TA	Technical Assistance
TOE	Ton of Oil Equivalent
Vinacomin	Viet Nam National Coal and Mineral Industries Group
VNEEP 3	Viet Nam National Energy Efficiency Programme period 2019 - 2030

PART 1: GENERAL INTRODUCTION

Energy efficiency and conservation are considered the most economical solution compared to investment costs for source, transmission and distribution infrastructure, and associated operating costs (losses, operation ...). Therefore, using energy economically and efficiently is the top priority solution. In our country, the National Target Program on energy efficiency and conservation in the 2006-2010 period and the 2011-2015 period has decreased by 3.4% and 5.6%, respectively, compared with the total energy consumption of each corresponding stage. However, in the context of exhausting domestic energy resources, high demand for energy consumption, ensuring energy security, and implementing commitments to the Paris Agreement are major challenges for the energy industry in Vietnam. On March 13, 2019, the Prime Minister approved the National Program on Energy efficiency and conservation for the period of 2019 - 2030 (VNEEP3) in Decision No. 280 / QD-TTG. The program offers energy savings of between 8-10% of total commercial energy consumption for the 2019-2030 period.

Decision No. 280 / QD-TTg clearly stated that the People's Committees (PPCs) of central-affiliated cities and provinces are responsible for approving and implementing the EE&C Plan (Plan) in the locality. Department of Industry and Trade (DOIT) has a very heavy responsibility, assisting the Provincial People's Committee to lead the organization and supervision of the implementation of the contents of the Plan, coordinate with the management departments to guide, inspect and monitor the implementation of the EE &C Plan in enterprises, organizations and individuals using energy in the locality.

"Energy Partnership Programme between Viet Nam and Denmark in the 2017-2020 period "(DEPP2 Program) provided technical assistance (TA) to Vietnam on capacity development for DOIT to increase regulatory enforcement of Law on EE&C at the provincial level, including support for the implementation of the VNEEP3 Program.

The guiding documents include the Guidelines, the Outline and the calculation tool (Excel spreadsheet) of EE planning, that are the deliverables under TA project to assist the Department of Industry and Trade (DOIT) in developing the Provincial EE Plan for the 2020-2025 period (hereinafter referred to as the Plan) targets to contribute to the implementation of the targets of the VNEEP3 Program.

Methodology for developing a set of guidance documents in the form of a partnership between the two governments, particularly between the regulatory agencies of the two countries Vietnam - Denmark, especially with the participation of two DOITs selected as partners to participate in the DEPP2 program are Bac Giang and Dong Nai. A set of guidelines has been drafted with DOIT partners, completely revised after an extensive consultation workshop with 63 DOITs nationwide

A set of guidelines on developing provincial EE &C Plan will be issued, disseminated by the Ministry of Industry and Trade (MOIT), and is a useful set of documents to support DOIT on development and implementation of provincial EE&C Plan to implement the targets of VNEEP3 program in a comprehensive and unified manner nationwide

PART 2: METHODOLOGY

I. CONTEXT

Decision 280 dated 13th March 2019 "On approval of the National Energy Efficiency and Conservation Program for the 2019 – 2030 period" (Decision 280) gives the framework for DOIT's development of provincial energy efficiency and conservation (EE&C) programs and plans.

The main objective for the period until 2025 is:

Achieving the energy saving from 5.0 to 7.0% of total national energy consumption for the 2019 – 2025 period;

The energy-saving of 5-7% in the period 2019 – 2025 which means 5-7% in total energy consumption forecast from 2019-2025. Similarly, the reduction of consumption forecast by 2030 will from 8-10% in total of national energy consumption in the 2019 – 2030 period.

At the same time, Decision 280 also set the specific energy-saving targets for electricity distribution and large energy – consuming industrial sub-sectors.

The main target of Decision 280 relates to the total energy consumption, sets the target to reduce energy consumption, the tasks, and solutions to implement. Accordingly, an ideal EE planning process requires analysis of the provincial total energy consumption, forecasting energy consumption in case of absence of EE action; determine the necessary reduction of energy consumption in the province following the energy-saving targets under Decision 280 and give out EE solutions to implement.

The EE&C planning must be based on actual energy consumption in each sector and forecast energy consumption for the whole period, then setting specific energy-saving targets for each sector. But the EE&C Plan is only successful if its actions are implemented to create energy savings in practice.

II. METHODOLOGY

The steps for developing a provincial energy efficiency plan are as follows:

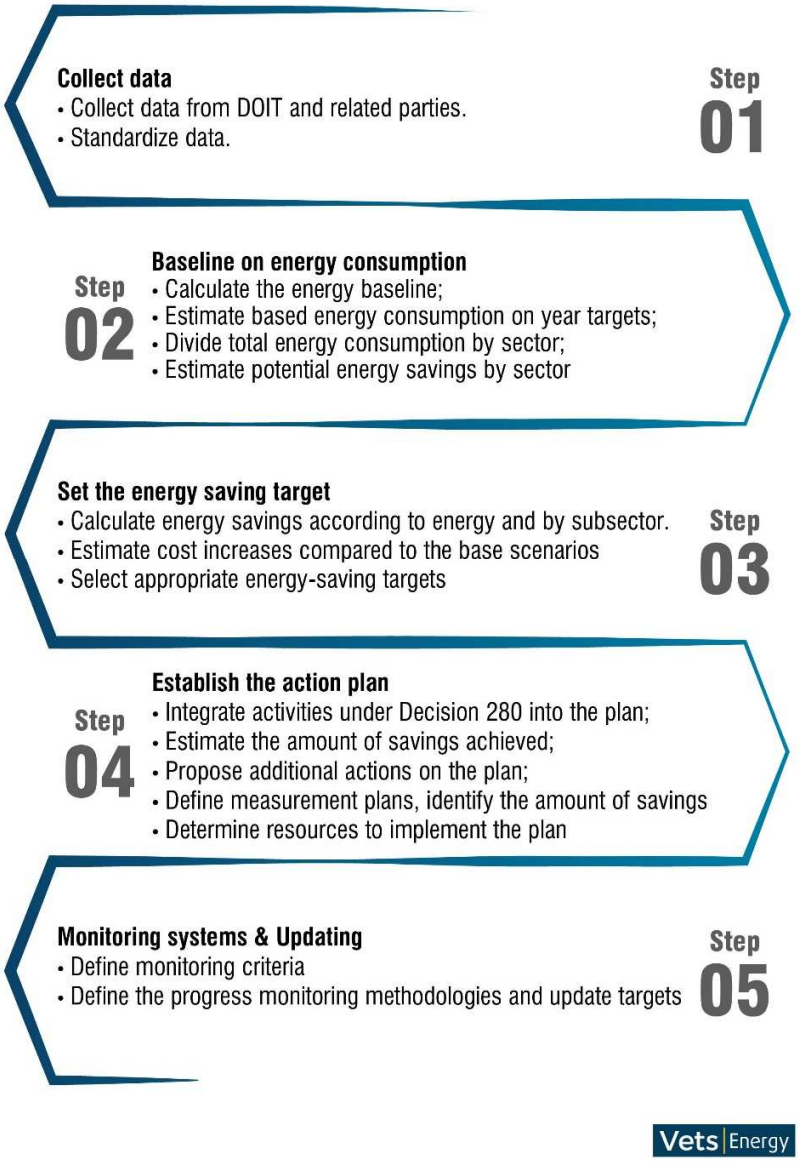


Figure 1. Steps to develop a provincial EE plan

After 2022, when the national database is expected to become available, the development of EE&C plans and programs will be included with main contents as follow:

Step 1- Data collection: Conduct data collection on energy consumption of the province at least for the latest 3-5 years, dividing the provincial energy consumption (exploit, import/export into/out of the province) according to types of energy as electricity/other fuels of the province; and assess, identify large energy-consuming fields, sectors, and sub-sectors for serving to develop the next period EE&C plan.

Step 2- Baseline on energy consumption: The baseline or base scenario is forecasted by extrapolating from current energy consumption, which has no action to save energy. The baseline is used as a reference basis to assess the energy savings achieved at the end of the period.

Forecast on provincial energy consumption baseline should be based on expected socio-economic development to extrapolate the total base energy consumption, using parameters as growth in population, wealth, industrialization, transport, housing floorage, etc. Evaluate the balance of energy supply to the province (supply-consumption) for the whole period

Divide the provincial total energy consumption into main sectors as follows:

- Electricity distribution
- Transportation
- Agriculture
- Public service
- Residential
- Trade and service
- Industry

The specific breakdown of energy consumption into sectors makes it possible to develop specific action plans for each sector and easily to monitor, evaluate implementation.

Step 3 - Set the energy-saving target: Convert national energy saving targets into provincial targets by calculating energy-saving scenarios for provinces and sectors/industries (industry, transportation, residential (households), trade and services…)

Iteration of the calculation of energy-savings by detailed delimitation into field, sector, industrial sub-sector, and develop specific action scenario until the provincial overall energy-saving objective is achieved.

Step 4- Establish the action plan: Develop action plans for group of objects subject to fields, sectors, and sub-sectors that were set energy-saving objectives in Step 3. Identify the responsibilities of relevant Departments and organizations, identify resources (people, funds) to implement simultaneously the actions in the EE&C plan.

Step 5- Monitoring system and Updating: Outline an annual actual energy consumption monitoring system that mix of indicators to evaluate the effectiveness of the action plan. From there, give directions to adjust the action plans and programs to ensure the set targets

Annex 1 gives the guideline how to use Excel tool on developing provincial EE&C plan.

Annex 2 is an example of DOIT's action planning.

III. DATA COLLECTION

3.1. Data available for DOIT

Currently, DOIT data sources still limited and incompleted compares to requirements for a comprehensive forecast on energy consumption in the province. Therefore, the assumptions based on 2016-2019 data from 03 main sources: EVN, GSO, and annual energy consumption data from designated energy users (DEUs) to establish the database for the baseline year 2019. However, it is expected that the national energy database will be completed by 2022 so that DOITs can access to have the full data. Before that time, the parties agreed to develop a simple tool to support DOIT on developing the EE&C plan.

According to the preliminary assessment survey, data on current energy consumption status, data to calculate energy consumption and energy-saving forecast of most provinces are insufficient and scattered in many places, so it is very difficult for DOIT to apply the overall methodology as mentioned above. In the period from now to 2022, that means, before the national energy database is available, the development of the EE&C plan for the province will be simplified with the data available to DOIT.

Currently, the following available data sources relate to activities of DOIT on developing the provincial EE&C plan and programs:

Table 1. Data available for DOITs

Data sources	Source name	Data available on the provincial level	Data available on provincial level divided into the sector	Data available on provincial level divided into the sub-sector	The validity of data source	Note
Energy Supplier	EVN	Yes	Yes	Yes	Yes	Electricity
	Vinacomin	No	No	No	No	Coal
	PVN	No	No	No	No	Oil & gas
Others	General Statistics Office of Vietnam	Yes[1)]	Yes[1)]	Yes	No	Need to have the support from MOIT on data collection
	Department of Planning	No				No energy data are available. - Only data on the number of enterprises in the province
	Department of Transports	No				No energy data available - Only data on the number of transportation enterprises in the province
	Department of Construction	No				
	Associations	Only data on the national level	Only data on the national level	Only data on the national level	Low	
	DEU's	Yes	Yes	Yes	Yes	Data from the annual reporting

Note [1)]GSO energy consumption figures are results of surveys by the survey form and used only in the absence of more reliable data. Data of DEUs and EVN data will be used as the main data source and supplemented with GSO data in case of missing data from EVN and DEUs. Since

2016 from now, GSO still not conducted a comprehensive survey; GSO annual surveys are only partially conducted (not comprehensive), and results often delayed by one or two years.

3.2. Delimitation of the provincial energy consumption

The delimitation must be done according to MOIT instructions. Some assumptions on consumptions are considered national and excluded from the provincial EE&C plan, for example the coal, gas thermal plant, etc. The method of splitting provincial energy consumption is shown in Annex 1.

Total provincial energy consumption
$= Total\ electricity\ consumption + total\ coal\ consumption$
$+ total\ gasoline\ consumption, other\ oil\ products$
$+ total\ natural\ gas\ consumption$
$+ total\ Biomass\ consumption\ and\ others\ Biomass$

Regarding the classifying of consumption sectors, GSO divides them into the following sectors: Industry and Construction; Transportation; Households; Trade and services; Public services; Agriculture; Non-commercial energy (other). Whereby:

Total provincial energy consumption
$= Total\ industrial\ energy\ consumption$
$+ total\ transportation\ consumption + total\ households\ consumption$
$+ total\ trade\ and\ service\ consumption$
$+ total\ public\ service\ consumption + total\ agricultural\ consumption$
$+ other\ non - commercial\ energy\ consumption$

3.3. Electricity

EVN can provide data on electricity consumption by time, sectors and sub-sectors.

EVN's data can be combined with information from the annual report of DEUs submitted to DOIT.

The 10-year forecast on electricity consumption included in the provincial power development planning (PPDP) for the period 2016-2025 with a vision to 2035 for 63 provinces/cities nationwide has been approved by MOIT. The electricity consumption forecast for the next 10 years under the PPDP at the provincial level has made forecasts for sectors and some key industrial sub-sectors of the province.

3.4. Fuel (Coal, oil & gas)

For DEU's and industrial sub-sectors covered by benchmark Circular, the consumption data reported annually by enterprises are the most reliable. The fuel consumption of DEUs or other sectors as transportation, civil consumption, etc. needs to be supplemented with data from other sources or purchased from survey data of GSO.

The data analysis of this document will focus on using a mix of EVN, GSO and DEUs data sets.

3.5. Conclusion

The data to be used by the DOITs when preparing the provincial EE&C plan should be based on available and high reliable data. It is expected that the national database will be available in

2022 to provide, and use for many purposes, in which, including the development of provincial EE&C plan.

Before the national energy database is available, the data set to develop the provincial EE&C plan collected from the sources mentioned in the table below:

Table 2. Data generation for provincial EE&C program and plan

Sector/Subsector	Electricity	Fuels
Sector		
Transportation	EVN	GSO
Production / Industry	EVN	GSO
Trade and Service	EVN	GSO
Public service	EVN	GSO
Households	EVN	GSO
Industrial sub-sector		
Steel	EVN	Only DEU data
Chemical	EVN	Only DEU data
Plastics production	EVN	Only DEU data
Cement	EVN	Only DEU data
Textile	EVN	Only DEU data
Alcohol, beer, and soft drink industry	EVN	Only DEU data
Paper	EVN	Only DEU data
Others	EVN	Only DEU data

IV. THE BASELINE OF ENERGY CONSUMPTION

Based on current data, conduct calculations and forecasts for baselines until 2025:

4.1. Socio-economic development and input information to forecast energy consumption

To forecast energy consumption for 2025 of province, it is necessary to have the basis and input information related to socio-economic development such as production growth, population, housing floorage, transport modes, and wealth. For this information, national data must be compiled with provincial data on socio-economic development plans, sectoral development plans, along with DOIT's understanding of DEUs in the province.

The multiple regression analysis methods are widely applied in many countries to forecast energy demand as well as electricity demand. The multiple regression method using the Simple-E model to build the correlation between energy consumption and socio-economic development as Gross regional domestic product (GRDP), the energy consumption of the previous year, population, number of households, Gross domestic product (GDP) per capita, expected wealth, and energy prices, etc. In Vietnam, this method has been used in national and provincial power development planning.

Because the current energy consumption data and related information on socio-economic orientating development in most provinces are insufficient, so it is difficult to apply the Simple-E model on forecasting of provincial energy consumption.

Due to the lacking of input information mentioned above, the energy consumption forecast will be simplified as follows:

- The provincial electricity consumption forecasted to 2025 will be based on the forecast of electricity demand growth following the provincial/municipal power development planning in the corresponding period, approved and updated by the MOIT at the lastest time. The forecast results will show the electricity consumption in the whole province, key sectors and industrial sub-sectors by 2025;

- Forecast on the consumption of coal, gasoline, and gas will be based on the growth rate of final energy demand by sectors in the Vietnam Energy Outlook Report 2017. The forecast results will set out fuel consumption of the whole province, key sectors, and industrial sub-sectors by 2025;

- The results of the energy consumption forecasted to 2025 will be the aggregation of results of electricity and fuel consumption as coal, gasoline, and gas in the whole province, the key sectors and industrial sub-sectors by 2025;

In each province, it needs to focus on DEUs, enterprises in the large energy-consuming sub-sectors, especially in the 08 sub-sectors listed in Decision 280. Combine the assessment on the current energy consumption status with provincial economic development orientation in the sector/sub-sector and the DOIT's understanding of enterprises to make the forecast on energy consumption growth in industrial sub-sectors. Especially, for several large energy-consuming enterprises in a specific industrial sub-sector, a dialogue with them is needed relating to the energy consumption forecast as is the orientation of production extension and technology transfer.

Forecast of electricity and fuel consumption for other fields such as transportation, trade and services, households should base on the information from relevant management Ministries and Departments (development orientation of transportation, fuel consumption standards, urban commercial buildings, housing development, development orientation of agriculture, forestry and fishery, etc.).

4.2. Energy consumption baseline calculation

The baseline is a conservative, “business as usual”-a scenario not considering any energy efficiency actions.

Energy consumption in 2019 in the whole province and each sub-sector is the basis for calculations. However, due to the insufficient provincewide data in 2019, we need to use data from 2016 (provincewide, each sector, and industrial sub-sector) to extrapolate determining the total energy consumption of the whole province and fuel consumption in the base year 2019.

Use the annual socio-economic growth rate of each sector/field to forecast energy consumption for each sector/field and provincewide. Forecast results for 2025 and 2030 are the basis for calculating the required savings.

Table 3. Forecast of energy consumption for sectors and industrial sub-sectors in the period of 2020-2030

Unit: TOE

Sector	2020	….	2025
Electricity supply (losses on the transmission			

Sector	2020	….	2025
and distribution grid)			
Agriculture			
Industry & Construction			
Trade and Service			
Households			
Public sector			
Transportation			
In total			

Industrial sub-sector	2020	…	2025
Steel industry			
Chemical industry			
Plastics production industry			
Cement industry			
Textile industry			
Alcohol, beer, and soft drink industry			
Paper industry			
Sugar industry			
Other industry & construction *			
Industry, in total			

Note (*): Note: The division of "other industry and construction" sectors can be split into the individual sub-sectors based on the proportion of energy consumption of those sectors in total sector consumption.

V. SET THE ENERGY SAVING TARGET

5.1. Specific targets

Decision 280 imposed national energy-saving targets and specific energy-saving targets for 08 key industrial sub-sectors covered with benchmark circular and for electricity transmission and distribution losses, etc. in the period 2019-2025 and the period 2019-2030 in Table 4.

Table 4. Targets under Decision 280 for 2025 and 2030

Sector & subsectors	Targets under Decision 280 to 2025, %
Electricity supply (losses on the transmission and distribution grid)	< 6,5% [2)]
Agriculture[1)]	-
Trade and Service[1)]	-
Households[1)]	-

Public service[1)]	
Transportation[1)]	-
Steel industry	3.00 – 10.00[2)]
Chemical industry	> 7.00
Plastics production industry	18.00 – 22.46[3)]
Cement industry	> 7.50
Textile industry	> 5.00
Alcohol, beer, and soft drink industry	3.00 – 6.88[3)]
Paper industry	8.00 – 15.80[3)]
Sugar industry[1)]	-
Other industry & construction[1)]	-
TOTAL	5-7%[4)]

Note:

[1)] *Part of the general reduction target*
[2)] *Depending on product type and production technology*
[3)] *Depending on product type and production scale*
[4)] *The general target is compiled from contributions of sectors/fields and sub-sectors.*

To ensure obtaining the general national energy-saving target, the provinces have to set specific energy-saving targets for respective fields/sectors and industrial sub-sectors in their state management area to contribute to national targets. It is necessary to use targets under Decision 280 as a reference basis. However, the province should rely on the scale and characteristics of energy consumption in DEUs, enterprises, and other energy users; the provincial energy-saving implementation plans along with the enterprise's plans on using renewable energy to build targets for the province. Specific as follows:

- For the key industrial sub-sectors implementing energy-saving such as Steel, Plastics, Beverages, and Paper, it is necessary to evaluate each of DEU's report to determine the energy-saving target applied to establishments; compiling and analyzing according to the sub-sector to determine the energy-saving target for the sub-sector.

- For the 08 key sub-sectors to implement energy-saving in Table 4, the energy-saving potential can reference from DEU's energy audit reports. The energy-saving potentials and energy-saving solutions in the energy audit reports are a very good basis to determine the energy-saving potential in respective industrial sub-sectors.

- Besides, for the sub-sector covered by benchmark, the evaluation reports on energy-saving potential when developing energy consumption norms (SEC) will be a good reference data source to determine energy-saving potentials in industrial sub-sectors of a province/city. Energy-saving targets set for these sub-sectors stated in Decision 280 and must not be larger than the energy consumption norm prescribed under SEC Circular.

From the above bases, energy-saving targets in 08 key industrial sub-sectors, as well as the whole industry, will be identified.

For energy users in the sectors of Transportation, Agriculture, Public Services, Trade and Services and the industrial sub-sectors without a benchmark, the province should set the energy-saving targets for each of these sector/sub-sector for contribution to the provincial general energy-saving targets and ensuring the total of provincial energy consumption decreases from 5-7% in the period 2019-2025.

The target for the losses on the electricity distribution grid of the province determined in the power development planning that approved by the MOIT and the power loss reduction program and plan of the provincial power company.

5.2. Targets for each sector and industrial sub-sector

Summary of energy-saving targets for all sectors/industrial sub-sectors, and the provincewide in the period from 2020 to 2025 in the following table:

Table 5. Energy-saving targets for each sector and sub-sector in the period until 2025

Sector	**2020 (%)**	**2021 (%)**	**2022 (%)**	**2023 (%)**	**2024 (%)**	**2025 (%)**	**2020-2025 (%)**	**Responsibility of implementation**
Electricity distribution								DOIT take the prime responsibility, provincial power companies coordinate
Agriculture, forestry and fishery								DOIT take the prime responsibility, DARD coordinate
Trade and service								DOIT
Households								DOIT take the prime responsibility, District/County People's Committee coordinate
Public service								
Transportation								DOIT take the prime responsibility, DOT coordinate
TOTAL							5-7%	
Key sub-sectors								
Steel industry								DOIT
Chemical industry								DOIT
Plastics production industry								DOIT
Cement industry								DOIT
Textile industry								DOIT
Alcohol, beer, and soft drink industry								DOIT

Sector	2020 (%)	2021 (%)	2022 (%)	2023 (%)	2024 (%)	2025 (%)	2020-2025 (%)	Responsibility of implementation
Paper industry								DOIT
Sugar industry								DOIT
Other industry & construction								DOIT
Industry, total								

Note: In the 2026 - 2030 period, the summary of the sector and subsector energy savings targets is in the same way.

Decision 280 states clearly that responsibility for EE&C planning belongs to different management departments and organizations, but DOIT takes the prime responsibility and is the focal point supporting the Provincial People's Committee (PPC) to develop and organize the implementation of the plan. DOIT also provides the contents of the approved provincial EE plan to related management departments and takes coordination in the implementation process.

VI. ESTABLISH THE ACTION PLANS

6.1. Integrate activities under Decision 280 into the plan

After establishing the baseline of energy consumption, energy-saving targets for the province, it is necessary to develop the energy efficiency action plan to meet the set targets.

The action plans of the plan must be in line with the socio-economic development program of the province/city, especially in line with the task groups in Decision 280, which must include duties under the implementation responsibility of the province/city. Accordingly, the provincial/municipal EE&C plan must include but not limited to the following activities:

- Guiding on the implementation of legal regulations; guiding on the fuel conversion technology process; guiding on the efficient operation management process in the sub-sectors; guiding on the implementation of EE&C solutions in the locality;
- Providing technical and financial assistance to promote investment, production, and business projects on EE&C for activities: production, manufacturing, and transforming of vehicle markets, equipment, machinery, production lines, public lighting, household energy saving, etc.;
- Strengthening capacity on EE&C for groups of state management officials, provincial consultancy units and energy-using establishments;
- Strengthening inspection, supervision, prompting, guidance to implement and evaluate the implementation results on the provisions of the law on EE&C;
- Communication to raise public awareness about energy use; disseminating and communicating energy efficiency management models of DEUs and energy use establishments in locality and provinces having cooperative relations on energy conservation.
- Strengthening domestic and international relations and cooperation in the field of EE&C;
- Conducting scientific research and technological development on EE&C.

The identity of solutions, actions, scale, and methods on mobilizing resources to implement the EE&C plan is particularly important. The solutions and action programs proposed must be in line with the set-out specific energy-saving targets and the groups of energy users corresponding with targets. Criteria (or set of key indicators) need to be defined to assess the targets, operation

results and monitor the implementation process, for example, evaluating the implementation on annual, mid-term, and at the final stage of plans, etc.

Noting that should arrange in prioritizing order on solutions and action plans based on assessing the level of contribution of activities into the general energy-saving target of the whole province (EE solutions included in the provincial EE&C plan are all evaluated as having good economical efficiency according to the energy audit report and practical experience). Actions must give out the level of implementation results and contribute to energy-saving targets, for example, the compliance of DEUs in applying energy management systems can assess energy-savings at each facility and determine the rate of energy-savings for sub-sector. The actions also should be consistent with the characteristics of the provincial energy consumption structure, the plan to implement energy-saving solutions, and the use of renewable energy of DEUs and energy using establishments along with the ability to arrange resources (finance, human, etc.)

Based on the scale of each specific measure and action, it is necessary to estimate the total annual and in whole period implementation funding of the province. Balance the ability to arrange resources for implementation every year, the whole period. In case of limited funding, it is necessary to review and reduce the scale of the number of measures and actions in the provincial/municipal EE&C plan based on the priority order of the solutions and the assessment on impact level to the general energy-saving target of provincewide.

An example on aggregation of solutions to implement provincial EE&C plan in 2021-2025 period is shown in the table below:

Table 6. Aggregation of solutions to implement EE&C plan in the 2021-2025 period

No	Name of action	Year 2020		...		Year 2025	
		Scale of action	Contribute to energy-saving target (*)	…	….	Scale of action	Contribute to energy-saving target (*)
1	Provide technical assistance and promote investment projects on energy efficiency and conservation for production, renovation, and market conversion of vehicles, equipment, machinery, and production lines.						
1.1	Deploy the energy-saving measures in the Steel industry	Saving of 1,05%	key sub-sector			Saving of 5,26%	key sub-sector

No	Name of action	Year 2020		...		Year 2025	
		Scale of action	Contribute to energy-saving target (*)	…	….	Scale of action	Contribute to energy-saving target (*)
1.2	Support the application of the ISO 50001: 2018 energy management model for DEUs					03 models	Province
1.3	Disseminate and support enterprises to access renewable energy solutions (especially using solar energy), minimizing the need to use primary raw materials.					03 enterprises	Province
1.4	Develop a program to popularize skills for transport enterprises in the exploitation and use of motor vehicles in the direction of saving energy					100% of enterprises are accessed	Sector
1.5	Applying energy saving solutions, using renewable energy sources in agricultural production activities					03 agricultural production establishment	Sector
1.6	Management boards of buildings, offices, state agencies, administrative and non-business units coordinate with the Provincial power company to develop and implement electricity saving plans for their units, ensuring that the saving 5% of total annual electricity					Saving of 5%	Sector

No	Name of action	Year 2020		...		Year 2025	
		Scale of action	Contribute to energy-saving target (*)	…	….	Scale of action	Contribute to energy-saving target (*)
	consumption.						
1.7	To apply automatic control technology in public lighting and urban lighting; to promote the roadmap to automate public lighting according to time frames while ensuring traffic order and safety; do not reduce the capacity of signal lights and public lights in places where occurring traffic accidents regularly, with the risk of traffic unsafety, the turns, and intersections					02 pilot projects	Province
1.8	Restaurants, hotels, trade centers, commercial and service establishments, office complexes, and apartment buildings in the province have reduced the lighting capacity by 50% for advertising activities, outdoor decoration in the evening peak hours as requested by the Provincial power company; comply	50% percentage of lighting capacity for advertising and outdoor decoration reduces during peak hours	Province			50% percentage of lighting capacity for advertising and outdoor decoration reduces during peak hours	Province

No	Name of action	Year 2020		...		Year 2025	
		Scale of action	Contribute to energy-saving target (*)	…	….	Scale of action	Contribute to energy-saving target (*)
	with regulations on economical and efficient lighting, be ready to cut and reduce electricity demand when notified by the Provincial power company in case of power shortage						
...	...	...				...	
2	Communication to raise public awareness on EE&C						
2.1	Carry out communication in various forms, popularize the benefits of EE&C to all groups, individuals, industrial production, trade and services establishments	30% of accommodation residents have access; 04 programs on communication on media; 01 conference; 08 communication programs in business production	Province			100% of accommodation residents have access; 04 programs on communication on media; 01 conference; 08 communication programs in business production	Province
2.2	Organize communication and teaching about EE&C in schools in the province	Compile and issue integrated teaching materials; 02 extracurricular activities	Province			100% of teachers trained; 100% of schools integrate the content of education	Province

No	Name of action	Year 2020		...		Year 2025	
		Scale of action	Contribute to energy-saving target (*)	…	….	Scale of action	Contribute to energy-saving target (*)
						on EE; 02 extracurricular activities	
2.3	Compile, update information, print documents to introduce the EE&C management models. Support mechanism for applying renewable energy sources and current legal documents, information on energy-saving products and equipment in all fields of energy use. Post-printed materials will be distributed free of charge to those who attend seminars, conferences, training courses, and broadcast directly to enterprises in industrial parks and industrial clusters in the Dong Nai province.	02 manuals; 05 leaflets	Province			05 leaflets	Province
2.4	Develop the habit of EE&C through communication and advocacy activities on economical and efficient use of electricity, energy-saving products and technologies in					100% of communes, wards, residential areas organizing communication and advocacy	Province

No	Name of action	Year 2020		...		Year 2025	
		Scale of action	Contribute to energy-saving target (*)	…	….	Scale of action	Contribute to energy-saving target (*)
	communes, wards, and residential areas					activities.	
...	...	...				...	
3	Strengthening capacity on EE&C						
3.1	Organize training courses for energy management staff at DEUs. Disseminate legal knowledge, improve management capacity for energy managers at enterprises, and DEUs in the province. Training contents are regulated by the Ministry of Industry and Trade	01 training course / 30 people for each	Province			01 training course / 30 people for each	Province
3.2	Organizing conferences to guide investors, consultant units to design to implement the requirements of the National Technical Regulation on construction works using energy efficiency	01 conference / 100 guests	Key sub-sector			01 conference / 100 guests	Key sub-sector
...	...	...				...	
4	Inspect, monitor, and evaluate the results of EE&C						
4.1	Strengthen inspection of the implementation of energy audit reports and the application	50% of DEUs submit the energy audit report on time; 30% of DEUs	Province			100% of DEUs submit the energy audit	Province

No	Name of action	Year 2020		...		Year 2025	
		Scale of action	Contribute to energy-saving target (*)	…	….	Scale of action	Contribute to energy-saving target (*)
	of energy management models of DEUs	apply the energy management model				report on time; 100% of DEUs apply the energy management model	
4.2	Inspect and monitor production and business establishments have large energy-consuming Dong Nai province; There is a roadmap to eliminate and convert ineffective energy facilities in the province	10% of enterprises perform energy saving	Province			100% of enterprises perform energy saving	Province
...	...	...				...	...

Note:

(*) The assessment of the level of contribution to the general energy-saving target is also the basis for prioritizing the implementation (simply, ranking 03 high to lower priority levels such as levels 1, 2, 3)

Besides, there are many EE&C activities at the national level but there will be many positive impacts for energy-saving targets of provinces/cities such as: prescribe energy performance for equipment; training and grant auditors/energy manager certificate; develop the National Energy Data Center; EE&C communication and disseminating programs; capacity improvement training program; EE&C technology transfer program; and especially the role of the EE&C Promoting Fund to support actions in the provincial EE&C plan.

6.2. Estimate the savings achieved in comparison with the set targets

To manage and monitor whether energy-saving targets by sector/sub-sector and provincewide are achieved or not, it is necessary to estimate the level of energy savings with the contribution impact of measures in the EE&C plan, and the mandatory legal provisions on EE&C. After compiling contributions and comparing with the set energy-saving target, it is specifically as follows:

a) Energy-saving contribution according to provisions under benchmark Circular

- DEUs in industrial sub-sector with a benchmark

For DEUs in industrial sub-sectors that are covered by benchmark Circular, DOIT can use information from existing data sources such as the annual benchmarking reports, 1-year plan, and 5-year plan. With this method, the majority of provincial energy consumption data from DEUs can be monitored and managed with available reporting tools.

- Enterprises in industrial sub-sector with a benchmark

In the industrial subsectors with a benchmark, the enterprises must submit a report with the calculation of the current specific energy consumption (SEC - Value) and energy consumption norms (SEC-Target) in 2025. With this information and the assumption that the enterprises meet the SEC Target in 2025 the expected reduction in 2025 can be calculated and compared with the targets for the sub-sectors.

Table 7. Contribution of SEC activities compared to targets from EE&C Plan by 08 key sub-sectors.

No	Sub-sector	Targets under the EE&C Plan to 2020, TOE	Contribution of SEC activities to 2020, TOE	Residual (SEC – Target) to 2020, TOE	….	….	….
1	Steel industry						
2	Chemical industry						
3	Plastics production industry						
4	Cement industry						
5	Textile industry						
6	Alcohol, beer, and soft drink industry						
7	Paper industry						
8	Sugar industry						

Note: The actions are compiled, monitored, and evaluated annually. From there, additional action plans are developed to ensure to meet the set-out targets

In many cases, the results of energy-saving achieved by SEC activities will be similar to the EE&C plan's targets. In some cases, it may be necessary to change the energy-saving target for the sub-sector to achieve the level prescribed under SEC Circular. Through dialogue with the enterprise will identify specific savings for the industrial sub-sector. However, in some cases, it may be hard to be feasible, for example, if the enterprise has an energy consumption in 2019 that is equal to the level prescribed for 2025 according to SEC Circular.

b) Energy-saving contribution according to 1-year and 5-year reports of Circular 09

According to Circular 09/2012 / TT-BCT issued on 20th April 2012 by the Ministry of Industry and Trade, all DEUs have to submit 1-year, 5-year plans, and EE&C action plans of the enterprise. The expected energy-savings of the Plan for each year to 2025 should be calculated, compiled, and compared with the targets of sector/sub-sector.

Table 8. Contribution from the results of activities in the 1-year and 5-year plans compare to the target

Sector & Sub-sector	**Target to 2025 TOE**	**1-year/ 5-year plan activities TOE**	**Residual (1-year/ 5-year plan - Target) to 2025 TOE**
Trade and Service			
Construction			
Transportation			
...			

In case the outcome of the activities indicated in the 1-year and 5-year plans doesn't fulfill the objectives it must redetermined in the annual dialogue about the 1-year and 5-year plans.

c) Energy-saving contribution from measures of provincial EE&C plan

Each action in Table 6 is toward contributing to energy-saving targets inn the different industrial sub-sectors. For the industry sector, use of the above comparison method can assess the energy-saving contribution of the industrial sub-sector and the industry compared to the set target. However, for other groups of energy users, such as enterprises or energy users in transportation, trade and services, construction, residential, and public sectors will be difficult to manage, monitor, evaluate implementation according to above method.

For these sectors, first of all, DOIT takes the prime responsibility and coordinate with the related management departments to get an agreement on energy-saving targets and suitable measures. Actions should be specific and accordingly with the target groups. For example, the EE&C measures can be applied as follows:

- Incentives for renewable energy (accordingly with the groups of energy users).
- Regulation on EE&C measure for Trade and Service, buildings (like air-conditioned shops and offices shall have a minimum temperature of 25^{o}C when cooled);
- Disseminate, communicate on information on energy-efficient equipment (like webpages with good solutions or campaigns to shops with cooled products about good cooling management);
- Exchange of experience (like establishing forums where similar enterprises can share good practice)
- Product requirements (like a minimum efficiency for installation of new cooling units)

- Building requirements (like focus on the improvement of the technical installation in buildings)
- Construction sectors: regulations and certification for buildings;
- Public service: regulation on the application of energy-efficient equipment in public lighting, using intelligent lighting systems; Smart lighting in public administrative buildings.
- Transportation: programs on using vehicles in the direction of saving energy; communicate to increase the use of public transport to people;
- Households (Residentials): Communicating and disseminating EE&C in residential areas;
- Regulation on the rate of reduction of losses in electricity transmission and distribution systems so that the power company strives to implement;
- Etc.

Estimates of energy-saving contribution for each measure can be referenced from practical examples as the sample model and extrapolate to sector/industrial sub-sector.

d) Energy-saving contribution from measures of national EE&C plan

Many EE&C activities at the national level but there will have a large contribution for provincial/municipal energy-saving targets such as: prescribe energy performance for equipment; training and grant Auditors/energy manager certificates; develop the National Energy Data Center; EE&C communication and disseminating programs; Capacity improvement training program; EE&C technology transfer program; and especially the role of the EE&C Promoting Fund to support actions in the provincial/municipal EE&C plan.

Next, it is necessary to estimate the desired impact of the solutions. The above action can indicate whether the targets for these enterprises and target groups can be achieved or not, for example, as in the table below.

Table 9. Activities in the plan for non-DEU's and non-benchmarked industries

Activity targeting [name of the sector]	**Related energy consumption TOE**	**Expected impact TOE**	**Remarks & interaction with other actions**
Support industrial production enterprises to transform and replace obsolete and large energy-consuming equipment with energy-saving devices	169,221	14,029	
Encourage the installation of using renewable energy	...	...	
Minimum performance standards	...	...	
.....			
Total		**TOE**	

Note:

- *The data in Table 9 was taken from the data of activities in the plan for non-DEU's and non-benchmarked industries enterprises;*
- *The data in Table 9 was taken from the targeting activities in the Plan on energy efficiency and conservation in Dong Nai Province for 2020-2025 period*

6.3. Propose additional actions for plan

Compiling from energy efficiency plans of all sectors and sub-sectors and compared with the targets in Decision 280 to consider additional activities to ensure the energy efficiency set targets. Specific as follows:

a) Industry and key industrial sub-sectors

Table 10. The total outcome of activities in EE&C Plan compared to targets

	Sectors and sub-sectors	**Target to 2020 TOE**	**Outcome of EE-activities TOE**	**Residual (Action – Target) 2021 TOE**	**….**	**…..**	**……**
1	Steel industry						
2	Chemical industry						
3	Plastics production industry						
4	Cement industry						
5	Textile industry						
6	Alcohol, beer, and soft drink industry						
7	Paper industry						
8	Sugar industry						
9	Other industries & Construction						
	Total						

Often the first round in the EE&C planning process will not fulfill the objectives for industrial sub-sectors according to Decision 280, and therefore, a new loop must be taken to improve actions and generate new actions until meeting the objectives under Decision 280.

b) Other sectors

For other sectors, DOIT takes the prime responsibility and coordinates with the Management Departments (like Department of Agriculture and Rural Development, Transport, Construction, and District/County People's Committee), and power companies to monitor and additional actions toward achieving the general energy-saving target of the provincial EE&C plan.

For the Residentials, DOIT takes the prime responsibility for reviewing and supplementing actions related to EE&C for households. The plan may include encouragement actions on the development of renewable energy such as installing rooftop solar energy, disseminating and communicate information on EE&C (paper & on the website, campaigns, and training programs) but need to supported by the national level for requirements of product and building and regulations on promoting EE&C behavior.

The implementation plan must include but are not limited to the following measures:

The provincial power companies:

- Plan to reduce losses in the distribution system.

DOC

- Building projects: compliance with regulations and certified buildings;
- Public lighting: applying energy-saving devices in public lighting, using intelligent lighting systems;
- The public administration buildings: implementing the application of energy efficiency solutions, intelligent lighting in public administrative buildings.

DOT

- Key transport enterprises: programs for vehicle efficiency;
- Solutions to increase the proportion of public transport use of residents.

DPI

- Industrial parks / clusters: EE&C solutions.

County/District People's Committee

- Communicating and campaigning for EE&C in residentials;

DOET

- - Schools: Integrate EE&C into educational programs;
- …

DOST

- Implementing scientific research projects to apply energy conservation into reality in the locality.
- …

The action in combination with the national measures:

- Products: implementing energy performance requirements
- Energy auditors/managers: having training and certificate granted
- Develop National Energy Data Centre
- Establish EE&C Promotion Fund

6.4. Action plan

The most important part of the EE&C plan is to put action into practice toward better energy efficiency.

Every enterprise, department/committee/branch, or organization needs to develop an action plan and update it every year, to assess the situation of the energy-saving target to 2030.

DOIT will develop an annual action plan for implementation.

Some examples are shown in Annex 2. This example is from a province where industry accounts for a significant share of energy consumption. It is important to focus on a few specific actions and attempt to implement them. Some new activities may be added to next year's plan but must ensure contributions to the energy conservation targets set out for the whole period.

6.5. The estimate of implementation funding

a) ***The estimate of implementation funding***

Based on the list of activities, estimated budget for implementation annually, and for the whole period 2020-2025 (specify and detail funding needs based on the list of activities, expected time and funding estimates required for each year of the period from 2020 to 2025). Develop a reasonable plan to mobilize resources, in which the budget capital is determined as limited and used to support and stimulate the mobilization of other capital sources.

The cost to implement depends on energy consumption by TOE and the desired impact on energy saving. To determine the cost, you need to follow these steps:

- Determine the implementation cost of each activity; There are activities conducted by a loan enterprise. For example, for the installation of renewable energy(rooftop solar PV), the enterprise must arrange their capital.
- Make a table to determine the implementation fundings for each action: State budget, other sources, etc.;

Implementation funding of annual activities and the whole period of the EE&C plan (Table 6) will be estimated as an example in Table 11 below.

Table 11. Implementation funding for activities in the EE&C plan compared to budget estimates

No.	Name of Action	Year 2020		...		Year 2025	
		State Budget	Other sources	…	….	State Budget	Other sources
1	Provide technical assistance and promote investment projects on energy efficiency and conservation for production, renovation, and market conversion of vehicles, equipment, machinery, and production lines.						
	Deploy the energy-saving measures in the Steel industry						
	Support the application of the ISO						

No.	Name of Action	Year 2020		...		Year 2025	
		State Budget	Other sources	…	….	State Budget	Other sources
	50001: 2018 energy management model for DEUs						
	Disseminate and support enterprises to access renewable energy solutions (especially using solar energy), minimizing the need to use primary raw materials.						
	Develop a program to popularize skills for transport enterprises in the exploitation and use of motor vehicles in the direction of saving energy						
	Applying energy saving solutions, using renewable energy sources in agricultural production activities						
	Management boards of buildings, offices, state agencies, administrative and non-business units coordinate with the Provincial power company to develop and implement electricity saving plans for their units, ensuring that the saving 5% of total annual electricity consumption.						
	To apply automatic control technology in public lighting and urban lighting; to promote the roadmap to automate public lighting according to time frames while ensuring traffic order and safety; do not reduce the capacity of signal lights and public lights in places where occurring traffic accidents regularly, with the risk of traffic unsafety, the turns, and intersections						
	Restaurants, hotels, trade centers, commercial and service establishments, office complexes, and apartment buildings in the province have reduced the lighting capacity by 50% for advertising activities, outdoor decoration in the evening peak hours as requested by the Provincial power						

No.	Name of Action	Year 2020		...		Year 2025	
		State Budget	Other sources	…	….	State Budget	Other sources
	company; comply with regulations on economical and efficient lighting, be ready to cut and reduce electricity demand when notified by the Provincial power company in case of power shortage						
2	Communication to raise public awareness on EE&C						
	Carry out communication in various forms, popularize the benefits of EE&C to all groups, individuals, industrial production, trade and services establishments						
	Organize communication and teaching about EE&C in schools in the province						
	Compile, update information, print documents to introduce the EE&C management models. Support mechanism for applying renewable energy sources and current legal documents, information on energy-saving products and equipment in all fields of energy use. Post-printed materials will be distributed free of charge to those who attend seminars, conferences, training courses, and broadcast directly to enterprises in industrial parks and industrial clusters in the Dong Nai province.						
	Develop the habit of EE&C through communication and advocacy activities on economical and efficient use of electricity, energy-saving products and technologies in communes, wards, and residential areas						
3	Strengthening capacity on EE&C						
	Organize training courses for energy management staff at DEUs. Disseminate legal knowledge, improve management capacity for energy managers at enterprises, and DEUs in the province.						

No.	Name of Action	Year 2020		...		Year 2025	
		State Budget	Other sources	…	….	State Budget	Other sources
	Training contents are regulated by the Ministry of Industry and Trade						
	Organizing conferences to guide investors, consultant units to design to implement the requirements of the National Technical Regulation on construction works using energy efficiency						
4	Inspect, monitor, and evaluate the results of EE&C						
	Strengthen inspection of the implementation of energy audit reports and the application of energy management models of DEUs						
	Inspect and monitor production and business establishments have large energy-consuming Dong Nai province; There is a roadmap to eliminate and convert ineffective energy facilities in the province						

Note:

- Aggregate actual funding for activities in each year and period, to compare with the initial budget estimate. From there, combined with the results (%) of energy savings achieved, to evaluate and develop additional actions.

b) ***Allocate and mobilize the implementation resources***

Based on the content of the action program to determine the implementation human resources include:

- The leading agency, coordinating and implementing units (management agencies, coordination agencies, enterprises, relevant organizations, and individuals);
- Allocate and mobilize resources to carry out activities (supporting budget, socialized capital from organizations and individuals, and other legal sources of funding, enterprise implementation expenses):
  - Budget focused on the following tasks: Communicating EE&C, environmental protection; Disseminating high-performance and energy-saving equipment; Solution-promoting technical assistance: Conserve energy in industrial, trade and service activities; Implementing EE&C in the building area and public lighting; Implementing EE&C in the transportation sector.
  - Mobilizing socialized capital sources from organizations, individuals, and other legal sources prescribed under the Law for activities with the budget is not

sufficient, for pilot projects, demonstration projects on EE&C, renewable energy, etc.

The registration funding from the implementation source of the National Program on EE&C: This funding source prioritizes activities to implement tasks under the VNEEP3 Program:

On the base of the registration of annual funding in the plans of all provinces and central cities sent to the Standing agency of the VNEEP3 Program, the Program will balance to **partially support** the locality under the operating regulations of the VNEEP3 Program Steering Committee. Due to the limited central budget, localities need to actively mobilize other local capital sources.

Note, in the Plan, it is necessary to state clearly: "this is the need for funding registered with the VNEEP 3 Program and determined by the Central Government bases on general balance for nationwide"

Funding from the local budget and other sources mobilized by the provinces:

- Funding from the local budget aggregated from the programs for sustainable development, environmental protection, and local climate change response.
- Funding mobilized from socialized capital sources is from organizations and individuals and other legal sources of local funding (if any) for the activities in the Plan targeting to achieve both national and provincial targets

Should note that the City/Province actively allocates and balances funding according to regulations to implement both the target groups of the national and the local stated in their Plan.

Table 12. Aggregated cost of action implementation

Unit: Million dongs

No	Name of action	Year 2020		…		Year 2025	
		Budget	Other sources	….		Budget	Other sources
1	Provide technical assistance and promote investment projects on energy efficiency and conservation for production, renovation, and market conversion of vehicles, equipment, machinery, and production lines.						
	Deploy the energy-saving measures in the Steel industry	Enterprises build their own funding					
	Support the application of the ISO 50001: 2018 energy management model for DEUs					250	
	Disseminate and support enterprises to access renewable energy solutions (especially using solar energy), minimizing					1,000	

No	Name of action	Year 2020		…		Year 2025	
		Budget	Other sources	….		Budget	Other sources
	the need to use primary raw materials.						
	Develop a program to popularize skills for transport enterprises in the exploitation and use of motor vehicles in the direction of saving energy					300	
	Applying energy saving solutions, using renewable energy sources in agricultural production activities					300	300
	Management boards of buildings, offices, state agencies, administrative and non-business units coordinate with the Provincial power company to develop and implement electricity saving plans for their units, ensuring that the saving 5% of total annual electricity consumption.	500	500			500	500
	To apply automatic control technology in public lighting and urban lighting; to promote the roadmap to automate public lighting according to time frames while ensuring traffic order and safety; do not reduce the capacity of signal lights and public lights in places where occurring traffic accidents regularly, with the risk of traffic unsafety, the turns, and intersections					250	50
	Restaurants, hotels, trade centers, commercial and service establishments, office complexes, and apartment buildings in the province have reduced the lighting capacity by 50% for advertising activities, outdoor decoration in the evening peak hours as requested by the Provincial power company; comply with regulations on economical and	Annual operating budget					

No	Name of action	Year 2020		…		Year 2025	
		Budget	Other sources	….		Budget	Other sources
	efficient lighting, be ready to cut and reduce electricity demand when notified by the Provincial power company in case of power shortage						
2	Communication to raise public awareness on EE&C						
	Carry out communication in various forms, popularize the benefits of EE&C to all groups, individuals, industrial production, trade and services establishments	500	300			500	300
	Organize communication and teaching about EE&C in schools in the province					300	
	Compile, update information, print documents to introduce the EE&C management models. Support mechanism for applying renewable energy sources and current legal documents, information on energy-saving products and equipment in all fields of energy use. Post-printed materials will be distributed free of charge to those who attend seminars, conferences, training courses, and broadcast directly to enterprises in industrial parks and industrial clusters in the Dong Nai province.					710	
	Develop the habit of EE&C through communication and advocacy activities on economical and efficient use of electricity, energy-saving products and technologies in communes, wards, and residential areas	Annual operating budget					
3	Strengthening capacity on EE&C						
	Organize training courses for energy management staff at	300				300	

No	Name of action	Year 2020		…		Year 2025	
		Budget	Other sources	….		Budget	Other sources
	DEUs. Disseminate legal knowledge, improve management capacity for energy managers at enterprises, and DEUs in the province. Training contents are regulated by the Ministry of Industry and Trade						
	Organizing conferences to guide investors, consultant units to design to implement the requirements of the National Technical Regulation on construction works using energy efficiency	Annual operating budget					
4	Inspect, monitor, and evaluate the results of EE&C						
	Strengthen inspection of the implementation of energy audit reports and the application of energy management models of DEUs	Annual operating budget					
	Inspect and monitor production and business establishments have large energy-consuming Dong Nai province; There is a roadmap to eliminate and convert ineffective energy facilities in the province	Annual operating budget					

Note: Based on the scale of the actions proposed in Table 6 to conduct cost estimates and implementation resources.

6.6. Organize to implement plan

Decision 280 sets out national energy-saving targets. The EE Plan of the provinces and central-affiliated cities to allocate targets and implementation responsibilities to ensure the overall implementation nationwide, from central to local. At the local level, DOIT assists the PPC, is responsible for leading the planning, coordinating implementation.

To implement uniformly the plan, the provinces/cities can set up the provincial Planning Steering Committee to implement the work smoothly. The Vice-Chairman of the People's Committee is the head of the steering committee, the DOIT is the unit of the Steering Committee. Relevant departments are members of the Steering Committee

DOIT is a standing unit of the Steering Committee, responsible for the overall work, and implementing assignments under the management sector, in coordination with other departments

and agencies to implement assignments, and compiling annual activity results to report to the provincial People's Committee.

Relevant departments are responsible for conducting tasks related to management sectors and fields, in coordination with DOIT and other sectors departments to implement general tasks, monitor results of the tasks under the responsibility and send annual reports to the DOIT to aggregate, and report to the provincial/ municipal People's Committee

The implementation of action plans in the sectors to fulfill the objectives of the provincial EE&C plan is the responsibility of the relevant management departments and organizations as follows:

- Electricity distribution: Provincial Power Companies;
- Transportation: Department of Transport;
- Construction & Buildings: Department of Construction;
- Agriculture: Department of Agriculture and Rural Development;
- Public service and households: District People's Committee;
- Public lighting: District People's Committee;
- Trade and services: Department of Industry and Trade;
- Industry: Department of Industry and Trade.
- Etc.

VII. MONITORING SYSTEM AND UPDATING

In a dynamic society like the Vietnamese, five years is a long-term frame regarding changes in production and emergence of new industries as well as changes in society in general. Therefore, an annual status of energy consumption compared with the targets is appropriate. This will generate input to adjustments/redefine some of the related targets.

7.1. Updating the forecasts

The key factor in the forecasting process is the determination of the annual growth percentage. As shown in the example below minor change in the assumptions can lead to a huge difference some years out in the future.

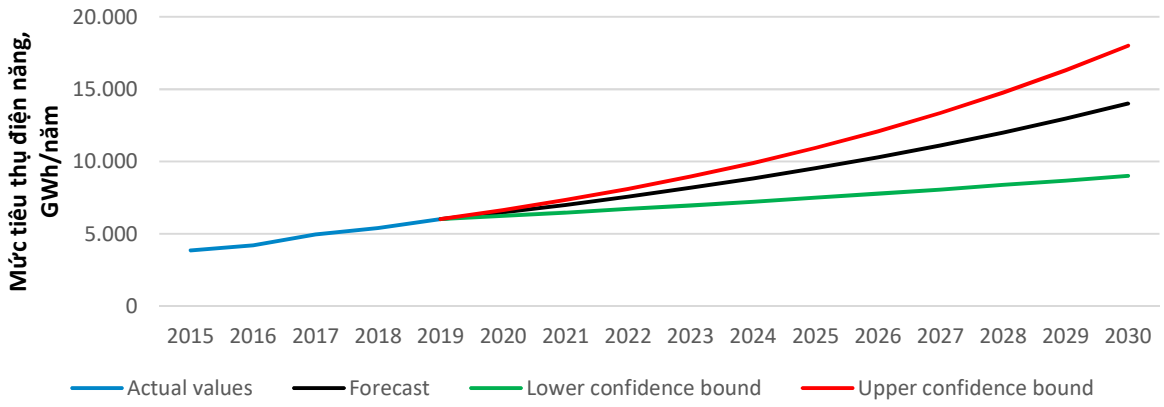


Figure 2. Example of forecast and variation for electricity consumption in a province

An annual update of the forecast will keep the EE&C-planning on track the actual development and will lead to an annual adjusting of the objectives

7.2. Monitoring the energy reduction under DOIT

The following table can be used as a simple tool to monitor and evaluate the progress of the energy efficiency effort:

Outline of a monitoring system to supervise the actual annual energy consumption and to adjust plans and action plans.

Table 13. Tool for the annual following up

	2020	2021	2022	2023	2024	2025	2020-2025
Initial objective [TOE]							
Updated objectives [TOE]							
Accumulated savings 2020 [TOE]							
Updated objective [TOE]							
Accumulated savings 2021 [TOE]							
Updated objective [TOE]							
Accumulated savings 2022 [TOE]							
Updated objective [TOE]							
Accumulated savings 2023 [TOE]							
Updated objective [TOE]							
Accumulated savings 2024 [TOE]							
Updated objective [TOE]							
Accumulated savings 2025 [TOE]							

Set up appropriate indicators for action programs to assess energy savings in each period.

7.3. Monitoring the total energy reduction

When information about energy consumption and reductions in areas that are not under DOIT responsibility is available the same exercise can be made for the province as a whole.

The result for the previous year can be published and other departments or organizations can adjust their work with implementing the EE-plans.

7.4. Specific monitoring and evaluation indicators

Expected key indicators to track the implementation of the annual plan:

- Annual energy consumption of sectors and industrial sub-sectors: used to compare to the base forecast value, thereby determining actual savings.
- Actual annual power loss rate: used to compare to the target value.
- Percentage of DEUs applying annual energy management system: used to compare to the target of 100% DEUs applying energy management system by 2025.
- Etc.

Besides, with targeting actions, the impacts of actions assessed in Table 13 will be used as specific indicators for these actions.

For indirect actions, evaluation indicators will be identified according to the characteristics of that action.

Example:

Each province/city set action with the target of training about 200 energy managers for DEU's in the period 2020-2025. The number of energy managers trained annually in the locality will be the specific KPI for this action. The department responsible for following this KPI will be the DOIT. Every year, the DOIT will need to synthesize the data of energy managers of enterprises trained in the locality to estimate the results of the year.

Departments are responsible for following the annual implementation results of the relevant actions and send them to the Department of Industry and Trade to compile. The table below is an example of annual dates monitored for taking action.

Table 14. Table of dates for specific monitoring and estimating

No	Name of action	Year 2020		...		Year 2025	
		Target	Implementation	…	….	Target	Implementation
1	Provide technical assistance and promote investment projects on energy efficiency and conservation for production, renovation, and market conversion of vehicles, equipment, machinery, and production lines.						
1.1	Deploy the energy-saving measures in the Steel industry	Saving of 1,05%	key sub-sector			Saving of 5,26%	key sub-sector
1.2	Support the application of the ISO 50001: 2018 energy management model for DEUs					03 models	Province
1.3	Disseminate and support enterprises to access renewable energy solutions (especially using solar energy),					03 enterprises	Province

No	Name of action	Year 2020		...		Year 2025	
		Target	Implementation	…	….	Target	Implementation
	minimizing the need to use primary raw materials.						
1.4	Develop a program to popularize skills for transport enterprises in the exploitation and use of motor vehicles in the direction of saving energy					100% of enterprises are accessed	Sector
1.5	Applying energy saving solutions, using renewable energy sources in agricultural production activities					03 agricultural production establishment	Sector
1.6	Management boards of buildings, offices, state agencies, administrative and non-business units coordinate with the Provincial power company to develop and implement electricity saving plans for their units, ensuring that the saving 5% of total annual electricity consumption.					Saving of 5%	Sector
1.7	To apply automatic control technology in public lighting and urban lighting; to promote the roadmap to automate public lighting according to time frames while ensuring traffic order and safety; do not reduce the capacity of signal lights and public					02 pilot projects	Province

No	Name of action	Year 2020		...		Year 2025	
		Target	**Implementation**	**…**	**….**	**Target**	**Implementation**
	lights in places where occurring traffic accidents regularly, with the risk of traffic unsafety, the turns, and intersections						
1.8	Restaurants, hotels, trade centers, commercial and service establishments, office complexes, and apartment buildings in the province have reduced the lighting capacity by 50% for advertising activities, outdoor decoration in the evening peak hours as requested by the Provincial power company; comply with regulations on economical and efficient lighting, be ready to cut and reduce electricity demand when notified by the Provincial power company in case of power shortage	50% percentage of lighting capacity for advertising and outdoor decoration reduces during peak hours	Province			50% percentage of lighting capacity for advertising and outdoor decoration reduces during peak hours	Province
...	...	...				...	
2	Communication to raise public awareness on EE&C						
2.1	Carry out communication in various forms, popularize the	30% of accommodation residents	Province			100% of accommodation residents	Province

No	Name of action	Year 2020		...		Year 2025	
		Target	Implementation	…	….	Target	Implementation
	benefits of EE&C to all groups, individuals, industrial production, trade and services establishments	have access; 04 programs on communication on media; 01 conference; 08 communication programs in business production				have access; 04 programs on communication on media; 01 conference; 08 communication programs in business production	
2.2	Organize communication and teaching about EE&C in schools in the province	Compile and issue integrated teaching materials; 02 extracurricular activities	Province			100% of teachers trained; 100% of schools integrate the content of education on EE; 02 extracurricular activities	Province
2.3	Compile, update information, print documents to introduce the EE&C management models. Support mechanism for applying renewable energy sources and current legal documents, information on energy-saving products and	02 manuals; 05 leaflets	Province			05 leaflets	Province

No	Name of action	Year 2020		...		Year 2025	
		Target	Implementation	…	….	Target	Implementation
	equipment in all fields of energy use. Post-printed materials will be distributed free of charge to those who attend seminars, conferences, training courses, and broadcast directly to enterprises in industrial parks and industrial clusters in the Dong Nai province.						
2.4	Develop the habit of EE&C through communication and advocacy activities on economical and efficient use of electricity, energy-saving products and technologies in communes, wards, and residential areas					100% of communes, wards, residential areas organizing communication and advocacy activities.	Province
...	...	...				...	
3	Strengthening capacity on EE&C						
3.1	Organize training courses for energy management staff at DEUs. Disseminate legal knowledge, improve management capacity for energy managers at enterprises, and DEUs in the province. Training contents are regulated by the Ministry of Industry and Trade	01 training course / 30 people for each	Province			01 training course / 30 people for each	Province

No	Name of action	Year 2020		...		Year 2025	
		Target	Implementation	…	….	Target	Implementation
3.2	Organizing conferences to guide investors, consultant units to design to implement the requirements of the National Technical Regulation on construction works using energy efficiency	01 conference / 100 guests	Key sub-sector			01 conference / 100 guests	Key sub-sector
...	...	...				...	
4	Inspect, monitor, and evaluate the results of EE&C						
4.1	Strengthen inspection of the implementation of energy audit reports and the application of energy management models of DEUs	50% of DEUs submit the energy audit report on time; 30% of DEUs apply the energy management model	Province			100% of DEUs submit the energy audit report on time; 100% of DEUs apply the energy management model	Province
4.2	Inspect and monitor production and business establishments have large energy-consuming Dong Nai province; There is a roadmap to eliminate and convert ineffective energy facilities in the province	10% of enterprises perform energy saving	Province			100% of enterprises perform energy saving	Province
...	...	...				...	...

PART 3: MANUAL ON CALCULATION TOOL

I. PURPOSE AND MEANING OF DOCUMENT

This document is designed to support staff from Departments of Industry and Trade (DOIT) in using calculation tools to calculate energy saving targets served to develop provincial EE plan in the period 2020-2030 (Aaccording to the National Program on Energy Efficiency and Conservation in the period of 2019-2030).

II. DOCUMENT STRUCTURE AND RULES

2.1. Structure

This spreadsheet is split into 03 main parts:

- Part 1: Input data
- Part 2: Intermediate calculation tables
- Part 3: Output with provincial targets

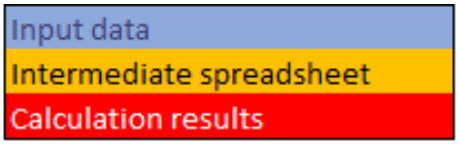
2.2. Abbreviation in calculation tool

Table 15. Abbreviation in the calculation tool

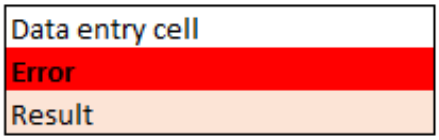
Abbreviation	In detail
DARD	Department of Agriculture and Rural Development
DEUs	Designated energy users
DOIT	Department of Industry and Trade
DOT	Department of Transportation
District/County PPC	District/County Provincial People's Committee
EAR	Energy audit report
EC	Energy consumption
EE&C Target	Energy efficiency and Conservation Target
GSO	Provincial general statistic office
PDP	Power development planning

2.3. Color rules of document:

- Rules in spreadsheet color:



- Rules in sheet cell color:



III. DETAILED DESCRIPTION OF SPREADSHEET

Table 16. Spreadsheets and description

Spreadsheet	Description
Electricity	Enter input data on electricity consumption in provincewide by sectors 2015-2019, data source from Power Company (EVN)
EC-GSO	Enter data on energy consumption in provincewide by fields/sectors in the year 2016. Data sources from GSO
EC-DEUs	Enter energy consumption data by provincial key industrial sub-sectors in 2019, data source from annual reports of designated energy users (DEU)
Energy – Total	This sheet aggregates provincial energy consumption by sectors in 2016. Herein includes electricity data linked from sheet "Electricity" and coal, gasoline, and gas data linked from sheet "TTNL - GSO". Data is in statistical units and converted into TOE. Consumption of gas and gasoline in 2019 included in the energy conversion table of the base year 2019 is determined from the GSO data of 2016, and combining the growth rate of each type of energy fuel in 2016 - 2019 from the Energy Outlook Report 2017. Electricity consumption in 2019 is linked from "Electricity".
PDP	Enter forecasts of electricity consumption growth rates for the province wide and each sector according to the provincial/municipal electricity development planning approved by the MOIT. Data on electricity consumption throughout the province and by field of 2019 is linked "Electricity". Enter data on the growth rate of the provincial industrial sub-sectors (if provincial power development planning not available, take from the national power development planning). The data on electricity consumption in 08 sub-sectors of 2019 is linked from "TTNL-DEUs".
Forecast - Electricity	Calculation sheet of electricity consumption forecast of provinces/cities till 2030. Electricity consumption data of provincewide by sector in 2019 linked from sheet "Electricity" using for extrapolating to 2025 and 2030 according to the growth rate in the PDP. Data on electricity consumption by 08 sub-sectors in 2019 linked from "TTNL - DEUs" and extrapolating to 08 sub-sectors by the growth rate in the PDP (if have, if not, replacing by economic growth rate)
Forecast - Fuel	Enter the annual growth rate of the final energy demand by industries according to the Vietnam Energy Outlook Report 2017, 2021-2025 period, and 2026-2030 period (growth rate of period 2022-2025 similar to 2021, the period of 2027-2030 is the same as 2026). From there, the annual fuel consumption forecast spreadsheet of the province/city in the stages: Data of coal, gasoline, and gas linked from sheet “TTNL-GSO”

Spreadsheet	Description
	also are extrapolated to 2025 and 2030 by the same growth rate
2025	Calculation table on energy-saving targets in the 2021-2025 period. The targets for each industrial sub-sector are following Decision 280. In particular, the objectives of the Steel industry depends on the type of product and production technology. For the Chemical Industry, Paper Industry, Plastics industry, Beer and beverage production industry, the objectives will depend on the type of product and the scale of production;
2030	Calculation table on energy-saving targets in the 2026- 2030 period. The targets for each industrial sub-sector are following Decision 280. In particular, the objectives of the Steel industry depend on the type of product and production technology. For the Chemical Industry, Paper Industry, Plastics industry, Beer and beverage production industry, the objectives will depend on the type of product and the scale of production;

IV. ENERGY-SAVING TARGET DETERMINATION WORKFLOW

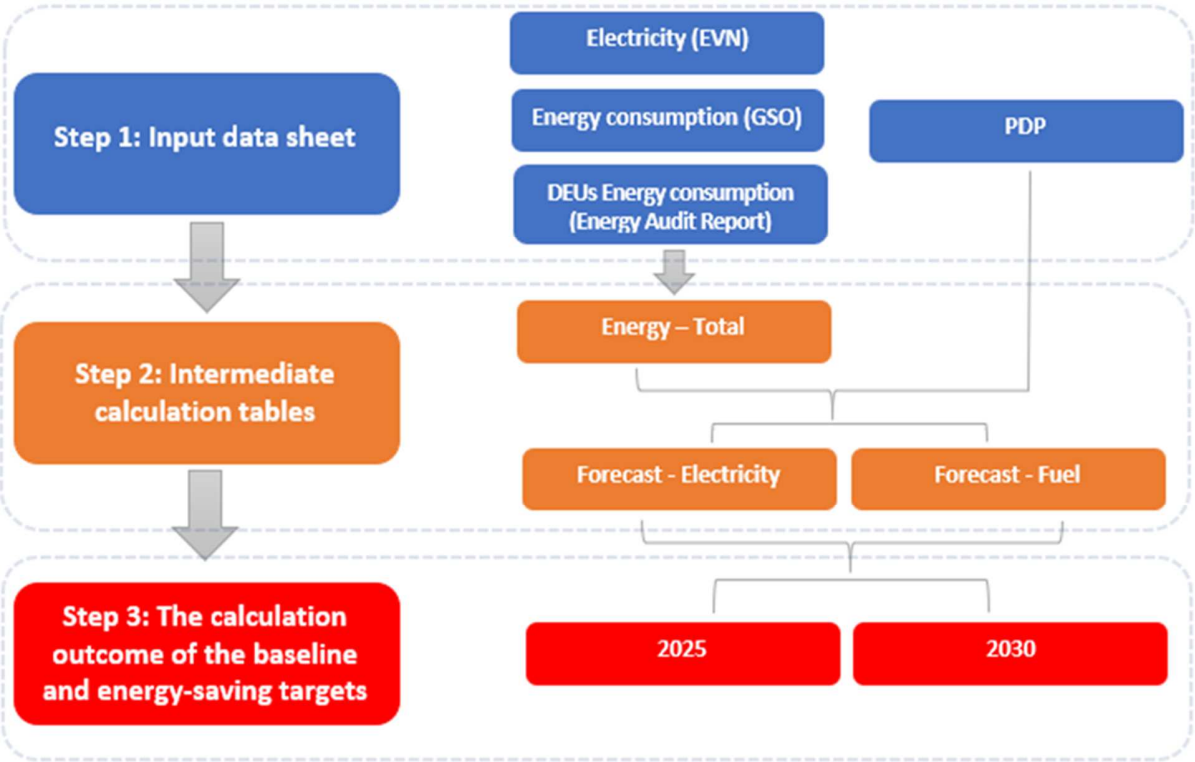


Figure 3. Data processing workflow of provincial EE calculation tool

V. DATA ENTRY METHOD

5.1. Input data for the sheet "Electricity"

Access the sheet "Electricity", then the interface will display as shown below.

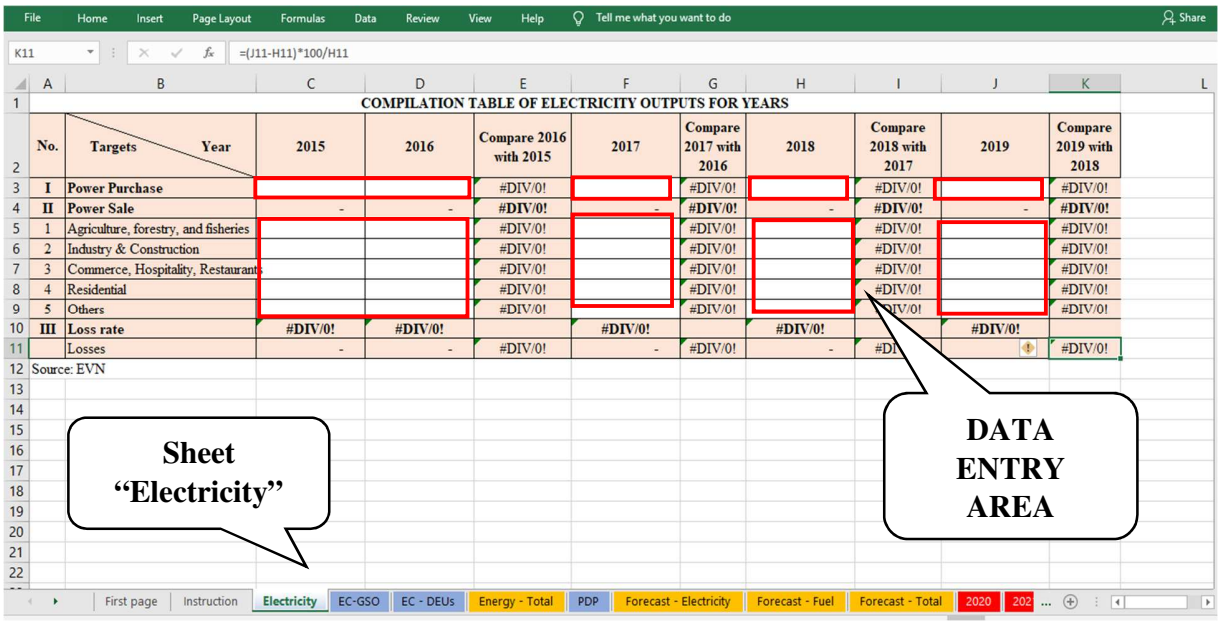


Figure 4. "Electricity" sheet interface

In the "SYNTHESIS TABLE OF ANNUAL ELECTRICITY PRODUCTION " there are 2 parts: "Year" and "Target". Users will collect data from the local Power Company and enter data into "White" cells in the table

After filling all necessary data into the "White" cells, the "Pink" cells will automatically calculate the necessary figures like the following example:

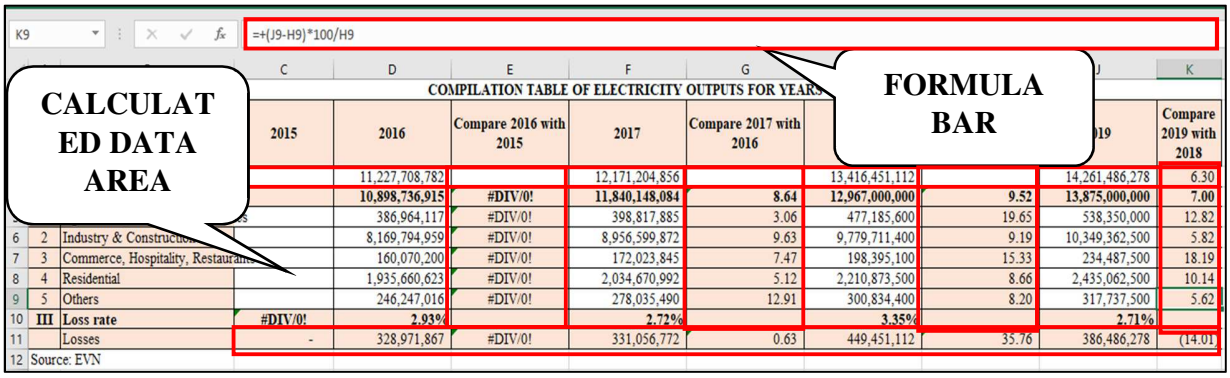


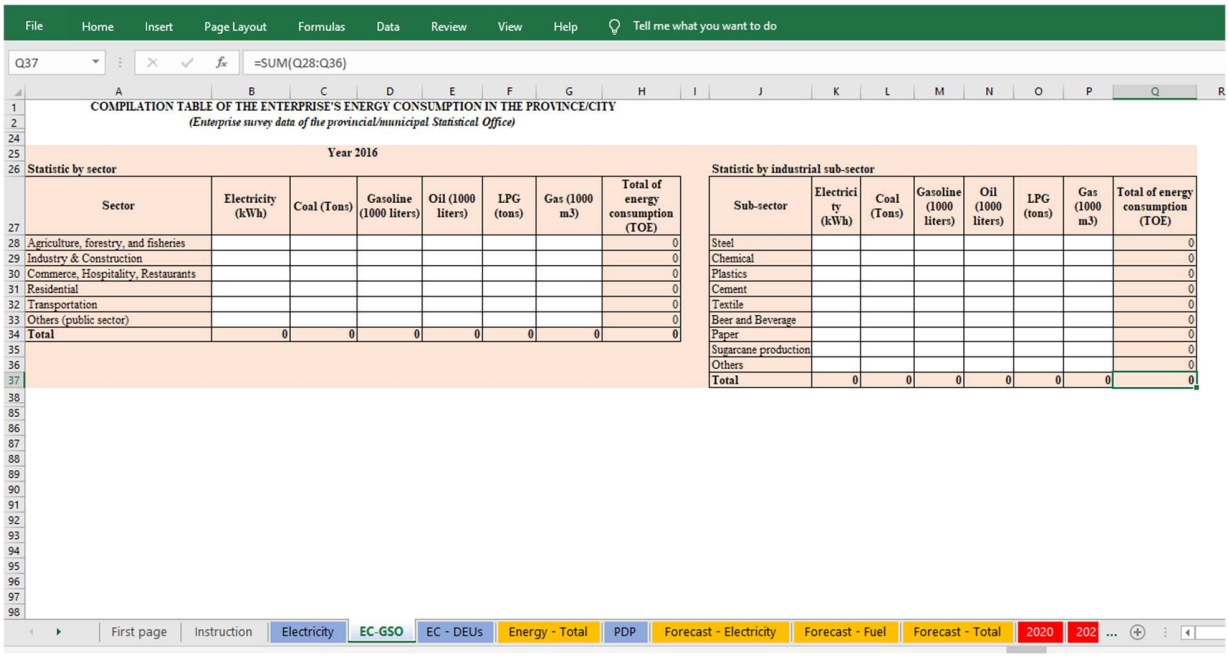
Figure 5. "Electricity" sheet interface after inputting data

Click on the "Pink" cell, the formula will be displayed in the "FORMULA BAR" of Excel.

5.2. Input data for the sheet "EC - GSO"

- EC–GSO: ENERGY CONSUMPTION –GENERAL STATISTICS OFFICE

:Access the sheet "EC-GSO", then the interface will display as shown below:



COMPILATION TABLE OF THE ENTERPRISE'S ENERGY CONSUMPTION IN THE PROVINCE/CITY

(Enterprise survey data of the provincial/municipal Statistical Office)

Year 2016

Statistic by sector

Sector	Electricity (kWh)	Coal (Tons)	Gasoline (1000 liters)	Oil (1000 liters)	LPG (tons)	Gas (1000 m3)	Total of energy consumption (TOE)
Agriculture, forestry, and fisheries							0
Industry & Construction							0
Commerce, Hospitality, Restaurants							0
Residential							0
Transportation							0
Others (public sector)							0
Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Statistic by industrial sub-sector

Sub-sector	Electricity (kWh)	Coal (Tons)	Gasoline (1000 liters)	Oil (1000 liters)	LPG (tons)	Gas (1000 m3)	Total of energy consumption (TOE)
Steel							0
Chemical							0
Plastics							0
Cement							0
Textile							0
Beer and Beverage							0
Paper							0
Sugarcane production							0
Others							0
Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Figure 6. "EC - GSO" sheet interface

In the Sheet, there are 2 tables: SYNTHESIS OF ENERGY CONSUMPTION BY ENTERPRISES IN PROVINCE / CITY" by sector and industrial sub-sectors

Users collect data and handle energy consumption data of enterprises in the province from the GSO and input data in the "White" cells:

- If the data has been handled as table content, input data in the "White" cell
- If the data has not been handled according to the form, the user can send a support request to the GSO to handle data according to the above form.

After inputting all the data in the "White" cells, the "Pink" cells will automatically calculate the necessary figures.

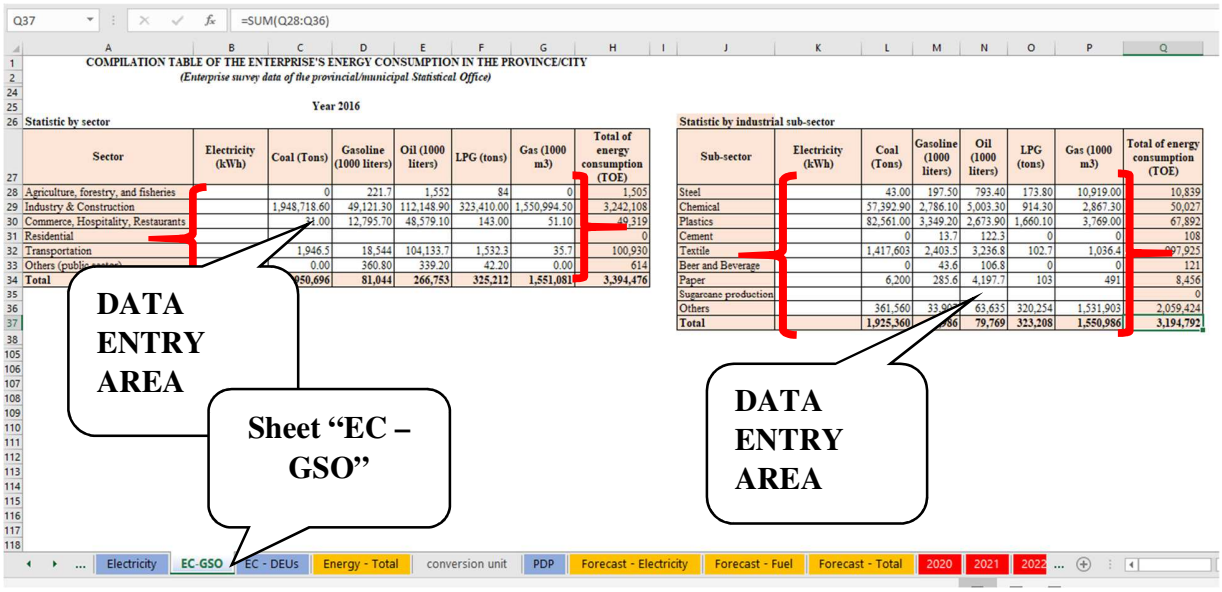


Figure 7."EC - GSO" sheet interface

5.3. Input data for the sheet "EC - DEUs"

- EC – DEUs: ENERGY CONSUMPTION – DESIGNATED ENERGY USER.

Access the sheet " EC-DEUs ", then the interface will display as shown below.

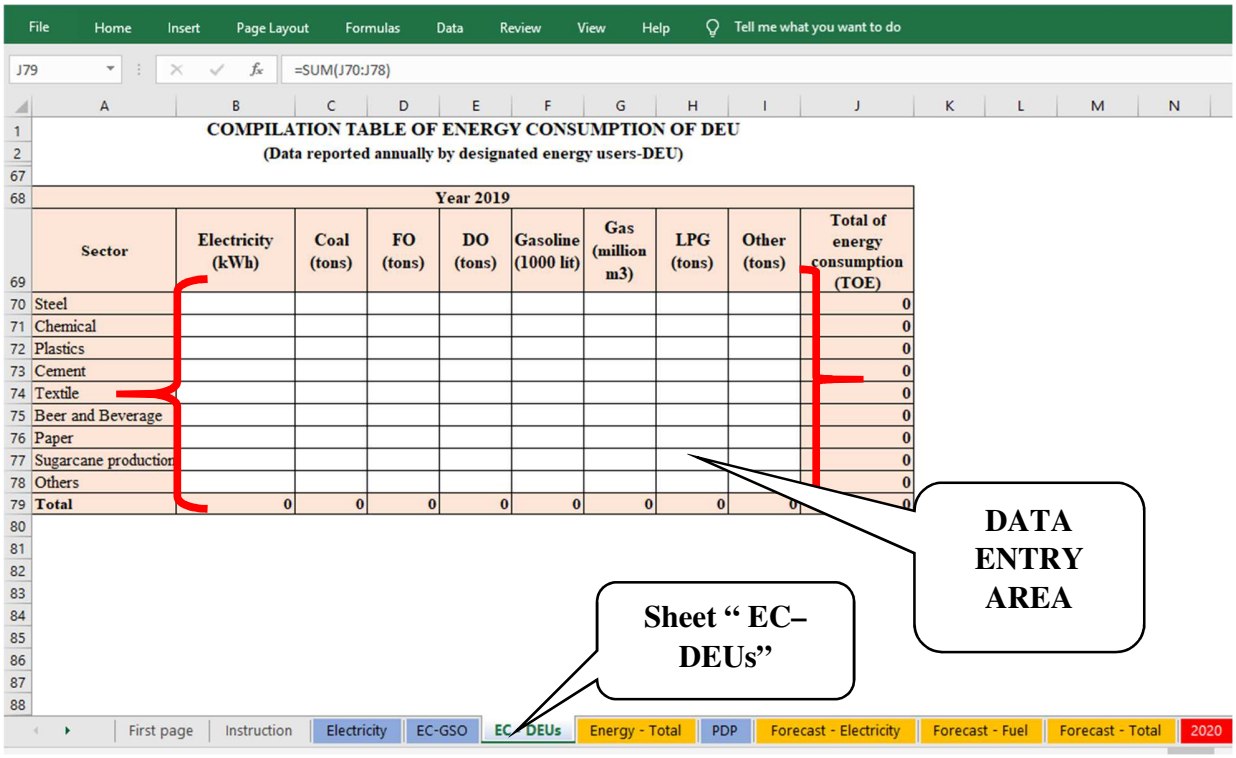


Figure 8. "EC - DEUs " sheet interface

In sheet "EC - DEUs", users handle and input data into the "White" cells in the table "SYNTHESIS TABLE ON THE ENERGY CONSUMPTION OF DEUs" from provincial/municipal DOIT

After entering all necessary input data into "White" cells, the "Pink" cells will automatically calculate the necessary data like the following example:

J79 =SUM(J70:J78)

COMPILATION TABLE OF ENERGY CONSUMPTION OF DEU
(Data reported annually by designated energy users-DEU)

		Year 2019								
		Electricity (kWh)	Coal (tons)	FO (tons)	DO (tons)	Gasoline (1000 lit)	Gas (million m3)	LPG (tons)	Other (tons)	Total of energy consumption (TOE)
70		301,520,507.0	0	0	0	0	0	0	0	46,525
71		230,412,493	9,507	0	69,996	0	0	0	0	113,603
72		398,139,445	0	0	0	0	0	0	0	61,433
73		22,093,306	0	0	0	0	0	0	0	3,409
74	Textile	2,835,373,045	0	0	0	0	0	0	0	437,498
75	Beer and Beverag	85,858,377	0	0	0	0	0	0	0	13,248
76	Paper	172,291,300	0	0		0	0	0	0	26,585
77	Sugarcane production									0
78	Others	701,022,195	13,511	0	583	0	0	0	0	426,820
79	**Total**	**6,746,710,668**	**23,018**	**0**	**70,579**	**0**	**0**	**0**	**0**	**1,129,121**

CALCULATED RESULTS

Figure 9. "EC - DEUs " sheet interface after inputting data.

5.4. Input data for the sheet “Power Development Planning”

- “PDP”: POWER DEVELOPMENT PLANNING

Access the sheet " PDP", then the interface will display as shown below.

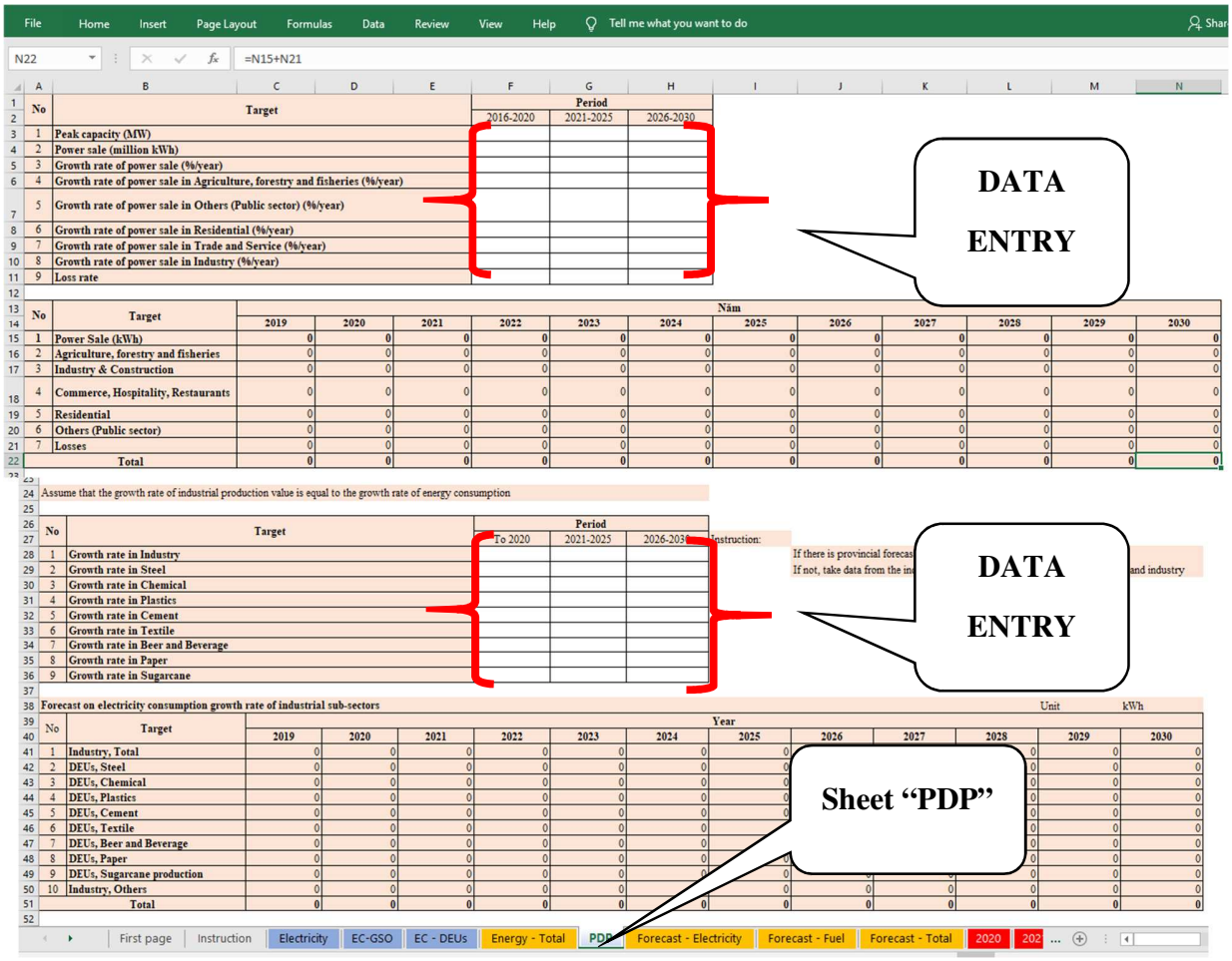
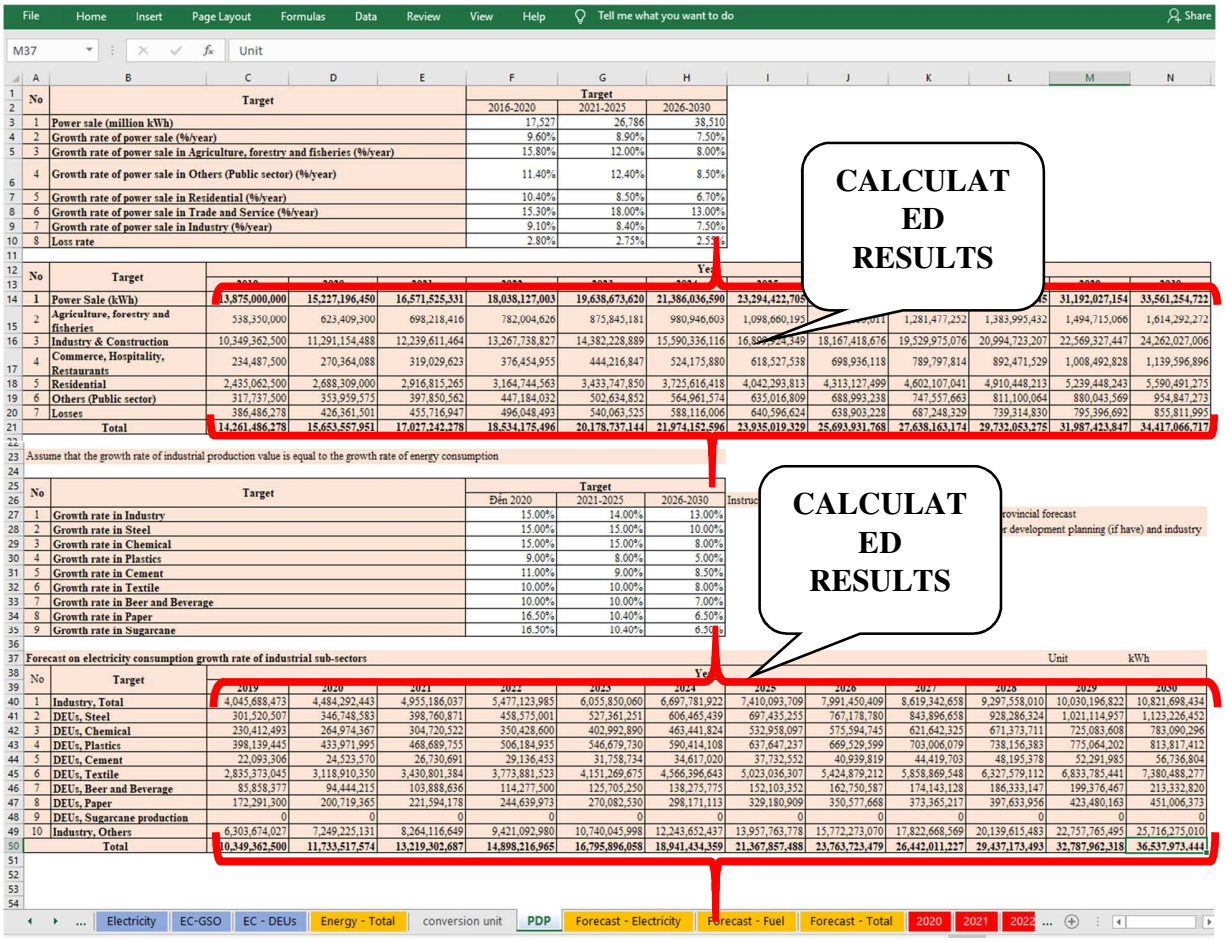


Figure 10. "PDP" sheet interface

In the "PDP" sheet, users handle and input data into the "White" cells in 2 tables:

- Table 1: Enter the electricity growth planning data by sectors from the Provincial Power development planning
- Table 2: Enter the industrial subsector growth rate according to provincial growth planning. In the absence of the province, the user enters the data on nationwide industrial development planning.

After entering all data in the "White" cells, the "Pink" cells will automatically display the calculation results with the necessary data according to the available formula, as in the example below



No	Target	Target 2016-2020	2021-2025	2026-2030
1	Power sale (million kWh)	17,527	26,786	38,510
2	Growth rate of power sale (%/year)	9.60%	8.90%	7.50%
3	Growth rate of power sale in Agriculture, forestry and fisheries (%/year)	15.80%	12.00%	8.00%
4	Growth rate of power sale in Others (Public sector) (%/year)	11.40%	12.40%	8.50%
5	Growth rate of power sale in Residential (%/year)	10.40%	8.50%	6.70%
6	Growth rate of power sale in Trade and Service (%/year)	15.30%	18.00%	13.00%
7	Growth rate of power sale in Industry (%/year)	9.10%	8.40%	7.50%
8	Loss rate	2.80%	2.75%	2.5%

No	Target												
1	Power Sale (kWh)	13,875,000,000	15,227,196,450	16,571,525,331	18,038,127,003	19,638,673,620	21,386,036,590	23,294,422,705				31,192,027,154	33,561,254,722
2	Agriculture, forestry and fisheries	538,350,000	623,409,300	698,218,416	782,004,626	875,845,181	980,946,603	1,098,660,195		1,281,477,252	1,383,995,432	1,494,715,066	1,614,292,272
3	Industry & Construction	10,349,362,500	11,291,154,488	12,239,611,464	13,267,738,827	14,382,228,889	15,590,336,116	16,8	18,167,418,676	19,529,975,076	20,994,723,207	22,569,327,447	24,262,027,006
4	Commerce, Hospitality, Restaurants	234,487,500	270,364,088	319,029,623	376,454,955	444,216,847	524,175,880	618,527,538	698,936,118	789,797,814	892,471,529	1,008,492,828	1,139,596,896
5	Residential	2,435,062,500	2,688,309,000	2,916,815,265	3,164,744,563	3,433,747,850	3,725,616,418	4,042,293,813	4,313,127,499	4,602,107,041	4,910,448,213	5,239,448,243	5,590,491,275
6	Others (Public sector)	317,737,500	353,959,575	397,850,562	447,184,032	502,634,852	564,961,574	635,016,809	688,993,238	747,557,663	811,100,064	880,043,569	954,847,273
7	Losses	386,486,278	426,361,501	455,716,947	496,048,493	540,063,525	588,116,006	640,596,624	638,903,228	687,248,329	739,314,830	795,396,692	855,811,995
	Total	14,261,486,278	15,653,557,951	17,027,242,278	18,534,175,496	20,178,737,144	21,974,152,596	23,935,019,329	25,693,931,768	27,638,163,174	29,732,053,275	31,987,423,847	34,417,066,717

Assume that the growth rate of industrial production value is equal to the growth rate of energy consumption

No	Target	Target Đến 2020	2021-2025	2026-2030
1	Growth rate in Industry	15.00%	14.00%	13.00%
2	Growth rate in Steel	15.00%	15.00%	10.00%
3	Growth rate in Chemical	15.00%	15.00%	8.00%
4	Growth rate in Plastics	9.00%	8.00%	5.00%
5	Growth rate in Cement	11.00%	9.00%	8.50%
6	Growth rate in Textile	10.00%	10.00%	8.00%
7	Growth rate in Beer and Beverage	10.00%	10.00%	7.00%
8	Growth rate in Paper	16.50%	10.40%	6.50%
9	Growth rate in Sugarcane	16.50%	10.40%	6.5

Forecast on electricity consumption growth rate of industrial sub-sectors — Unit: kWh

No	Target												
1	Industry, Total	4,045,688,473	4,484,292,443	4,955,186,037	5,477,123,985	6,055,850,060	6,697,781,922	7,410,093,709	7,991,450,409	8,619,342,658	9,297,558,010	10,030,196,822	10,821,698,434
2	DEUs, Steel	301,520,507	346,748,583	398,760,871	458,575,001	527,361,251	606,465,439	697,435,255	767,178,780	843,896,658	928,286,324	1,021,114,957	1,123,226,452
3	DEUs, Chemical	230,412,493	264,974,367	304,720,522	350,428,600	402,992,890	463,441,824	532,958,097	575,594,745	621,642,325	671,373,711	725,083,608	783,090,296
4	DEUs, Plastics	398,139,445	433,971,995	468,689,755	506,184,935	546,679,730	590,414,108	637,647,237	669,529,599	703,006,079	738,156,383	775,064,202	813,817,412
5	DEUs, Cement	22,093,306	24,523,570	26,730,691	29,136,453	31,758,734	34,617,020	37,732,552	40,939,819	44,419,703	48,195,378	52,291,985	56,736,804
6	DEUs, Textile	2,835,373,045	3,118,910,350	3,430,801,384	3,773,881,523	4,151,269,675	4,566,396,643	5,023,036,307	5,424,879,212	5,858,869,548	6,327,579,112	6,833,785,441	7,380,488,277
7	DEUs, Beer and Beverage	85,858,377	94,444,215	103,888,636	114,277,500	125,705,250	138,275,775	152,103,352	162,750,587	174,143,128	186,333,147	199,376,467	213,332,820
8	DEUs, Paper	172,291,300	200,719,365	221,594,178	244,639,973	270,082,530	298,171,113	329,180,909	350,577,668	373,365,217	397,633,956	423,480,163	451,006,373
9	DEUs, Sugarcane production	0	0	0	0	0	0	0	0	0	0	0	0
10	Industry, Others	6,303,674,027	7,249,225,131	8,264,116,649	9,421,092,980	10,740,045,998	12,243,652,437	13,957,763,778	15,772,273,070	17,822,668,569	20,139,615,483	22,757,765,495	25,716,275,010
	Total	10,349,362,500	11,733,517,574	13,219,302,687	14,898,216,965	16,795,896,058	18,941,434,359	21,367,857,488	23,763,723,479	26,442,011,227	29,437,173,493	32,787,962,318	36,537,973,444

Figure 11. "PDP" sheet interface after inputting data

VI. ENERGY CONSUMPTION ASSESSMENT

The contents include: Energy – Total, Forecast – Electricity, Forecast – Fuels, Forecast Results:

Working area

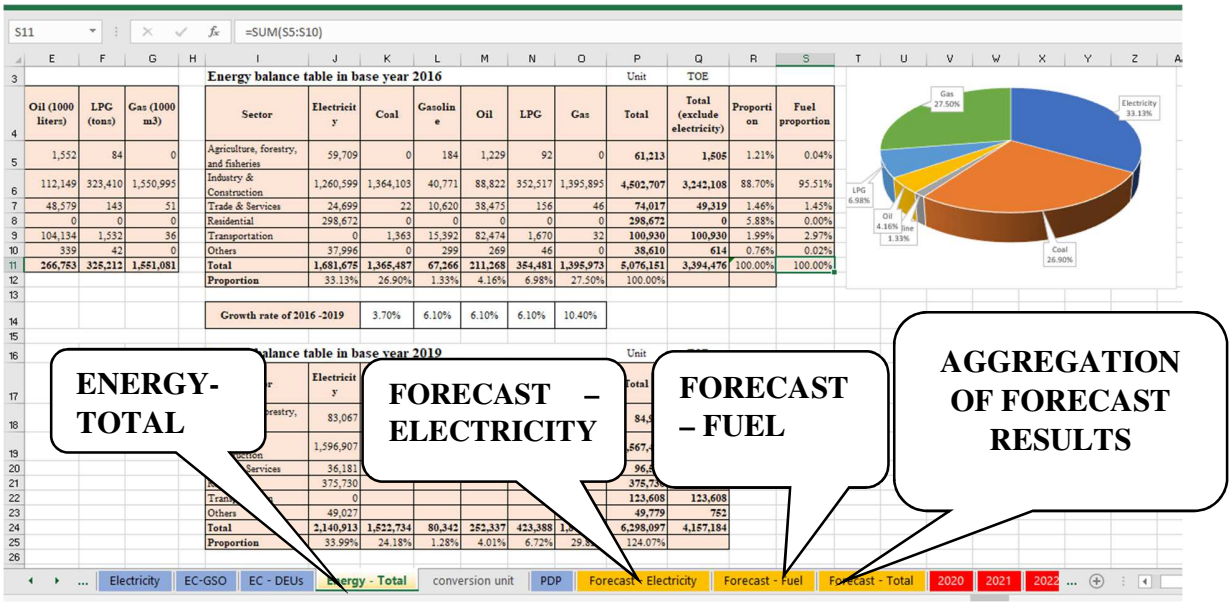


Figure 12. Working area of "Energy Total" Sheet after data entry

6.1. Energy - Total

This section includes 4 contents and is shown specifically:

- Table of energy statistics in 2016: Results shown;
- Table of energy conversion of 2016: Results shown;
- Growth rate table for 2016-2019: Enter values corresponding to Coal, Gasoline, Oil, LPG, Gas in the energy conversion table of 2016; The data source is from Vietnam Energy Outlook 2017.
- Table of energy conversion of the base year 2019: Results shown;

The results are shown in the energy conversion table of the base year 2019 are determined from the "Energy conversion table 2016" and "Growth rate"

Specifically: In the 2016 -2019 period,

- In 2016, Total of coal consumption: 612.699 (TOE);
- The growth rate of Coal is 3,7%;

⇨ In 2019, the total coal consumption will be: 612.699 * (1 + 0,37) ^3 (TOE)

Note: Other fuel types have similar calculation formula

6.2. Forecast - Electricity

The section "Forecast - electricity" showing the results of the electricity consumption by sectors up to 2030, based on the power consumption in the base year 2019 and the electricity growth rates of sectors and industries (extract from provincial/municipal or national power development plan if province/municipal has no plan).

In which:

Electricity consumption = *Electricity consumption in the previous year+ Electricity consumption in the previous year* The growth rate in the year needs to determine.*

6.3. Forecast- Fuel

Contents include 02 tasks:

Task 1: Enter final energy demand growth data by transportation, agriculture, public service, household, public service, trade and service, and industrial sectors. Area to enter data is "in 2020, 2021 and 2026". For the remaining years, the result will automatically display based on the calculation of the input data and the linked formula.

In which:

Energy consumption = *Energy consumption in the previous year+ Energy consumption in the previous year * The growth rate in the year needs to determine.*

Task 2: Monitor and evaluate the results showing the remaining contents of the working area "FORECAST – FUELS"

Note: The final forecast of energy demand growth rates across sectors was extracted from the Energy Outlook Report 2017.

6.4. Aggregation of forecast results

From "FORECAST - ELECTRICITY" sheet "FORECAST - FUEL" sheet, Sheet "FORECAST RESULTS" is a section showing the result of total converted energy consumption including electricity and fuel.

In which:

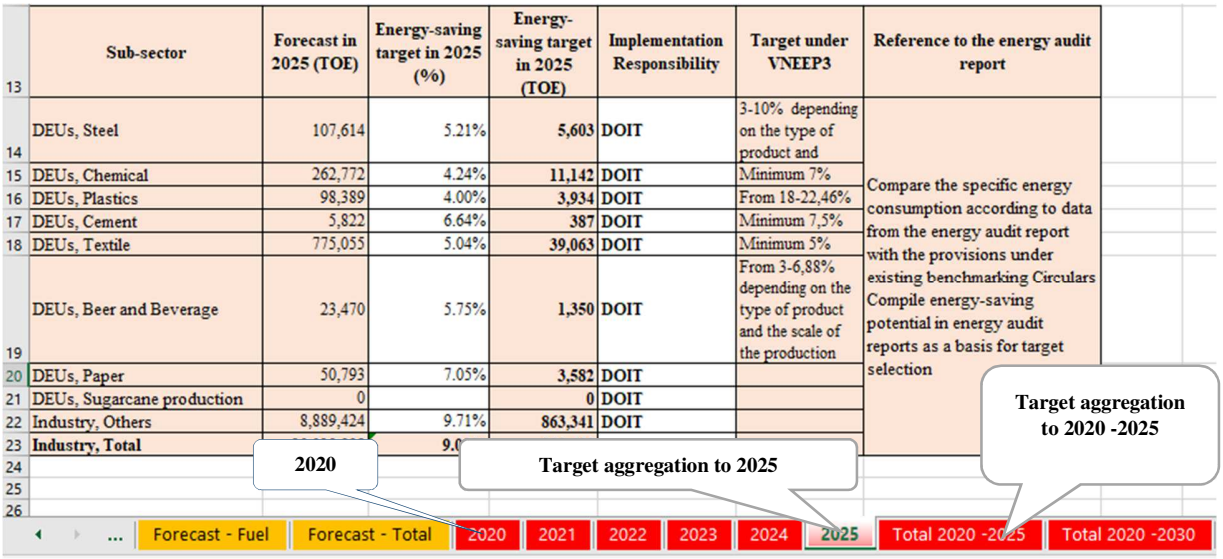
Total energy consumption of sector = *Electricity of consumption * 0.0001543 (from "Forecast – Electricity" sheet) + Conversion energy of the fuel (from "Forecast – FUEL" sheet)*

VII. GUIDANCE ON DETERMINING TARGETS

After completing the work of inputting data, then determining the energy-saving target to 2025 and 2030.

7.1. The working interface

a) The working area:



13	Sub-sector	Forecast in 2025 (TOE)	Energy-saving target in 2025 (%)	Energy-saving target in 2025 (TOE)	Implementation Responsibility	Target under VNEEP3	Reference to the energy audit report
14	DEUs, Steel	107,614	5.21%	5,603	DOIT	3-10% depending on the type of product and	Compare the specific energy consumption according to data from the energy audit report with the provisions under existing benchmarking Circulars Compile energy-saving potential in energy audit reports as a basis for target selection
15	DEUs, Chemical	262,772	4.24%	11,142	DOIT	Minimum 7%	
16	DEUs, Plastics	98,389	4.00%	3,934	DOIT	From 18-22,46%	
17	DEUs, Cement	5,822	6.64%	387	DOIT	Minimum 7,5%	
18	DEUs, Textile	775,055	5.04%	39,063	DOIT	Minimum 5%	
19	DEUs, Beer and Beverage	23,470	5.75%	1,350	DOIT	From 3-6,88% depending on the type of product and the scale of the production	
20	DEUs, Paper	50,793	7.05%	3,582	DOIT		
21	DEUs, Sugarcane production	0		0	DOIT		
22	Industry, Others	8,889,424	9.71%	863,341	DOIT		
23	**Industry, Total**		**9.0**				
24							
25							
26							

Figure 13. Working area with the content "Determining energy-saving targets" to 2025 and 2030

b) The content interface on defining the energy-saving target to 2020:

Baseline & Target in 2020

Sector	Forecast in 2020 (TOE)	Energy-saving target in 2020 (%)	Energy-saving target in 2020 (TOE)	Implementation Responsibility	Target under VNEEP3	Note
Electricity loss on the distribution grid	65,788	0.0%	0	Power Company	Lower than 6.5%	Discuss and agree with the Power Company on losses reduction target
Transportation	131,767	2.24%	2,952	DOT		Discuss and agree with DOT on the sectoral target
Agriculture	98,090	1.84%	1,805	DARD		Discuss and agree with DARD on the sectoral target
Public sector	55,388	2.64%	1,462	District/County People's Committee		
Residential	414,806	1.84%	7,632	District/County People's Committee		Discuss with District/County People's Committee on energy-saving target
Trade and Services	106,224	1.46%	1,548	DOIT		
Industry, Total	6,007,385	2.85%	171,356	DOIT		
TOTAL	**6,879,448**	**2.71%**	**186,755**		From 5-7%	

Sub-sector	Forecast in 2020 (TOE)	Energy-saving target in 2020 (%)	Energy-saving target in2020 (TOE)	Implementation Responsibility	Target under VNEEP3	Reference to the energy audit report
DEUs, Steel	53,503	1.9%	1,007	DOIT	3-10% depending on the type of product and production technology	Compare the specific energy consumption according to data from the energy audit report with the provisions under existing benchmarking Circulars Compile energy-saving potential in energy audit reports as a basis for target selection
DEUs, Chemical	130,644	1.64%	2,143	DOIT	Minimum 7%	
DEUs, Plastics	66,962	1.58%	1,058	DOIT	From 18-22,46%	
DEUs, Cement	3,784	2.24%	85	DOIT	Minimum 7,5%	
DEUs, Textile	481,248	1.84%	8,855	DOIT	Minimum 5%	
DEUs, Beer and Beverage	14,573	2.02%	294	DOIT	From 3-6,88% depending on the type of product and the scale of the production	
DEUs, Paper	30,971	2.3%	726	DOIT		
DEUs, Sugarcane production	0		0	DOIT		
Industry, Others	5,225,700	3.01%	157,189	DOIT		
Industry, Total	**6,007,385**	**2.85%**	171,356			

Figure 14. The content interface on defining annual energy savings targets to 2020

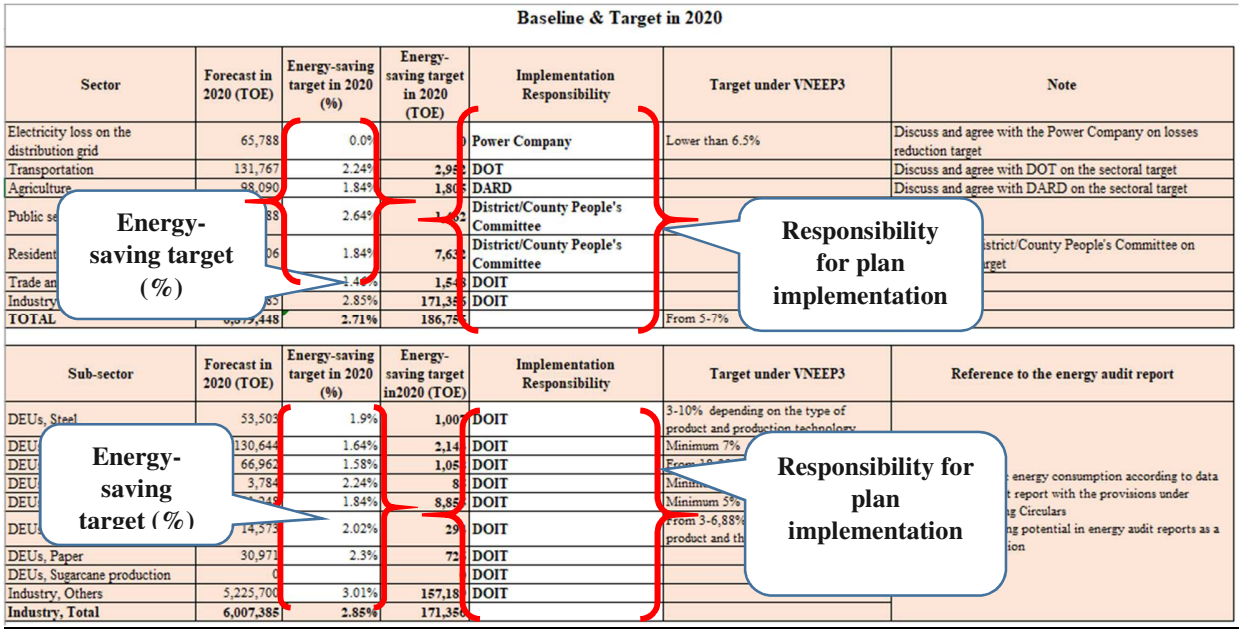
Content interface defining annual energy saving targets to 2025, 2030 is similar.

7.2. Guidelines on determination of energy-saving targets by 2020

a) Requirements for updating the information at:

- Energy-saving targets by 2020 (%);
- Responsibility for implementing the Plan.

Note: Every year, it is necessary to identify energy-saving targets to ensure the achievement of the set-out targets period (to 2025 and to 2030). The process of implementing annual energy-saving targets is similar to defining energy-saving targets to 2020.



Baseline & Target in 2020

Sector	Forecast in 2020 (TOE)	Energy-saving target in 2020 (%)	Energy-saving target in 2020 (TOE)	Implementation Responsibility	Target under VNEEP3	Note
Electricity loss on the distribution grid	65,788	0.0%		Power Company	Lower than 6.5%	Discuss and agree with the Power Company on losses reduction target
Transportation	131,767	2.24%	2,9	DOT		Discuss and agree with DOT on the sectoral target
Agriculture	98,090	1.84%	1,8	DARD		Discuss and agree with DARD on the sectoral target
Public se	88	2.64%	1,6	District/County People's Committee		
Resident	06	1.84%	7,6	District/County People's Committee		istrict/County People's Committee on rget
Trade an		1.4	1,5	DOIT		
Industry	85	2.85%	171,35	DOIT		
TOTAL	6,0	2.71%	186,75		From 5-7%	

Sub-sector	Forecast in 2020 (TOE)	Energy-saving target in 2020 (%)	Energy-saving target in2020 (TOE)	Implementation Responsibility	Target under VNEEP3	Reference to the energy audit report
DEUs, Steel	53,503	1.9%	1,00	DOIT	3-10% depending on the type of product and production technology	
DEU	130,644	1.64%	2,14	DOIT	Minimum 7%	
DEU	66,962	1.58%	1,05	DOIT		
DEU	3,784	2.24%	8	DOIT	Minim	energy consumption according to data
DEU		1.84%	8,85	DOIT	Minimum 5%	t report with the provisions under
DEU	14,573	2.02%	29	DOIT	From 3-6,88% product and th	g Circulars ng potential in energy audit reports as a
DEUs, Paper	30,971	2.3%	72	DOIT		ion
DEUs, Sugarcane production	0			DOIT		
Industry, Others	5,225,700	3.01%	157,18	DOIT		
Industry, Total	**6,007,385**	**2.85%**	171,35			

Figure 15. The information updating cells to define the energy-saving targets by 2020

b) The process of identifying information need to be updated

From the input data, the standardized results, the energy-saving targets will be determined for 7 objects. Each object will be identified energy-saving targets corresponding to the base, the reference object, the different implementation responsibilities.

- Objects to determine the energy-saving targets:
  - Electricity loss on the distribution grid;
  - Transportation;
  - Agriculture;
  - Public service;
  - Residential;
  - Trade and service;
  - Industry *(Including sectors and sub-sectors)*.
- Basis and references to determine the energy-saving target

Decision 280 / QD-TTG dated 13th March 2014 regarding "Vietnam National Energy Efficiency Program for the period of 2019 -2030" as the main base to determine energy-saving targets for each sector and sub-sector divided in the whole of province/city with the condition that the provincial/municipal energy-saving target must be at least under the energy-saving targets of Decision 280.

Table 17. Energy-saving targets under Decision 280 to 2025 by sector & sub-sector

No	Sector and Sub-sector	Energy-saving targets under Decision 280 to 2025 (%)
1	Electricity loss on the distribution grid	< 6.5 % (Percentage of distribution loss)
2	Transportation	-

No	Sector and Sub-sector	Energy-saving targets under Decision 280 to 2025 (%)
3	Agriculture	-
4	Public sector	-
5	Residential	-
6	Trade and Service	-
7	DEUs, Steel	3-10
8	DEUs, Chemical	>7
9	DEUs, Plastics	18-22.46
10	DEUs, Cement	>7.50
11	DEUs, Textile	>5.00
12	DEUs, Beer and Beverage	3-6.88
13	DEUs, Paper	8-15.80
14	Industry, Others	-

Besides, to increase the reliability and feasibility of the target, when implementing, the DOIT (planning division) needs to discuss and get an agreement with the direct management department in the sector or industrial sub-sector (implementation division) above based on the following data:

- Energy forecast results converted in 2020;
- Growth rates of sector and sub-sectors;
- Compare with specific energy consumption according to data from energy audit report with the provisions under benchmark Circulars;
- Energy-saving potential in energy audit reports.

Table 18: Agencies, directly management department of sector and sub-sectors

No	Sectors and Sub-sectors	Direct management departments
1	Electricity loss on the distribution grid	Provincial Power Company
2	Transportation	MOT
3	Agriculture	DARD
4	Public service	Provincial/District/County People's Committee
5	Residential (Household)	Provincial /District/County People's Committee
6	Trade and Service	DOIT
7	DEUs, Steel	DOIT
8	DEUs, Chemical	DOIT
9	DEUs, Plastics	DOIT
10	DEUs, Cement	DOIT
11	DEUs, Textile	DOIT
12	DEUs, Beer and Beverage	DOIT
13	DEUs, Paper	DOIT
14	DEUs Sugarcane production	DOIT
15	Industry, Others	DOIT

Result:

After reaching an agreement between DOIT and the direct management departments based on necessary conditions, then updating all related information in the section ***"Determining the energy-saving targets for the sector and sub-sector in 2020".***

Baseline & Target in 2020

Sector	Forecast in 2020 (TOE)	Energy-saving target in 2020 (%)	Energy-saving target in 2020 (TOE)	Implementation Responsibility	Target under VNEEP3	Note
Electricity loss on the distribution grid	65,788	0.0%	0	Power Company	Lower than 6.5%	Discuss and agree with the Power Company on losses reduction target
Transportation	131,767	2.24%	2,952	DOT		Discuss and agree with DOT on the sectoral target
Agriculture	98,090	1.84%	1,805	DARD		Discuss and agree with DARD on the sectoral target
Public sector	55,388	2.64%	1,462	District/County People's Committee		
Residential	414,806	1.84%	7,632	District/County People's Committee		Discuss with District/County People's Committee on energy-saving target
Trade and Services	106,224	1.46%	1,548	DOIT		
Industry, Total	6,007,385	2.85%	171,356	DOIT		
TOTAL	**6,879,448**	**2.71%**	**186,755**		From 5-7%	

Sub-sector	Forecast in 2020 (TOE)	Energy-saving target in 2020 (%)	Energy-saving target in2020 (TOE)	Implementation Responsibility	Target under VNEEP3	Reference to the energy audit report
DEUs, Steel	53,503	1.9%	1,007	DOIT	3-10% depending on the type of product and production technology	Compare the specific energy consumption according to data from the energy audit report with the provisions under existing benchmarking Circulars Compile energy-saving potential in energy audit reports as a basis for target selection
DEUs, Chemical	130,644	1.64%	2,143	DOIT	Minimum 7%	
DEUs, Plastics	66,962	1.58%	1,058	DOIT	From 18-22,46%	
DEUs, Cement	3,784	2.24%	85	DOIT	Minimum 7,5%	
DEUs, Textile	481,248	1.84%	8,855	DOIT	Minimum 5%	
DEUs, Beer and Beverage	14,573	2.02%	294	DOIT	From 3-6,88% depending on the type of product and the scale of the production	
DEUs, Paper	30,971	2.3%	726	DOIT		
DEUs, Sugarcane production	0		0	DOIT		
Industry, Others	5,225,700	3.01%	157,189	DOIT		
Industry, Total	**6,007,385**	**2.85%**	171,356			

Figure 16. Results of defining energy saving targets in 2020

***Note**: The results on the image are for reference only*

7.3. Aggregate the energy-saving target to 2025, to 2030:

a) Requirements for updating the information at:

- Energy-saving target up to 2025 (%) in TOE;
- Responsibility for implementing the Plan.

COMPILATION OF ENERGY - SAVING TARGETS TO 2025

Sector	Target in 2020		Target in 2021		Target in 2022		Target in 2023		Target in 2024		Target in 2025		Target period 2020 - 2025		Responsibility for Plan implementation
	(%)	(TOE)	(%)	(TOE)	(%)	(TOE)	(%)	(TOE)	(%)	(TOE)	(%)	(TOE)	(%)	(TOE)	
Electricity loss on the distribution grid	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	Power Company
Transportation	2.2%	2,952	2.6%	3,592	2.9%	4,304	3.2%	5,093	3.5%	5,967	3.8%	6,932	3.1%	28,841	DOT
Agriculture	1.8%	1,805	2.2%	2,369	2.5%	3,041	2.8%	3,839	3.1%	4,785	3.4%	5,901	2.7%	21,739	DARD
Public sector	2.6%	1,462	3.0%	1,840	3.3%	2,290	3.6%	2,822	3.9%	3,450	4.2%	4,191	3.5%	16,056	District/County People's Committee
Residential	1.8%	7,632	2.0%	9,001	2.2%	10,548	2.3%	12,292	2.5%	14,257	2.6%	16,466	2.3%	70,196	District/County People's Committee
Trade and Services	1.5%	1,548	1.7%	2,002	2.0%	2,543	2.2%	3,187	2.5%	3,954	2.7%	4,867	2.2%	18,100	DOIT
Industry, Total	2.9%	171,356	3.9%	261,666	5.0%	370,066	6.1%	499,526	7.6%	695,073	9.1%	928,402	6.1%	2,926,089	DOIT
TOTAL	**2.7%**	**186,755**	**3.7%**	**280,471**	**4.7%**	**392,791**	**5.7%**	**526,759**	**7.0%**	**727,485**	**8.4%**	**966,760**	**5.7%**	**3,081,021**	

Sub-sectors	Target in 2020		Target in 2021		Target in 2022		Target in 2023		Target in 2024		Target in 2025		Target period 2020 - 2025		Responsibility for Plan implementation
	(%)	(TOE)	(%)	(TOE)	(%)	(TOE)	(%)	(TOE)	(%)	(TOE)	(%)	(TOE)	(%)	(TOE)	
DEUs, Steel	1.9%	1,007	2.5%	1,515	3.0%	2,153	3.6%	2,949	4.4%	4,132	5.2%	5,603	5.9%	17,358	**DOIT**
DEUs, Chemical	1.6%	2,143	2.1%	3,155	2.6%	4,423	3.0%	6,001	3.6%	8,295	4.2%	11,142	5.3%	35,160	**DOIT**
DEUs, Plastics	1.6%	1,058	2.0%	1,453	2.4%	1,905	2.9%	2,420	3.4%	3,128	4.0%	3,934	8.8%	13,897	**DOIT**
DEUs, Cement	2.2%	85	3.0%	124	3.8%	169	4.5%	221	5.6%	298	6.6%	387	6.4%	1,284	**DOIT**
DEUs, Textile	1.8%	8,855	2.4%	12,705	3.0%	17,236	3.5%	22,547	4.3%	30,157	5.0%	39,063	6.8%	130,563	**DOIT**
DEUs, Beer and Beverage	2.0%	294	2.7%	428	3.3%	585	4.0%	769	4.9%	1,037	5.8%	1,350	8.2%	4,463	**DOIT**
DEUs, Paper	2.3%	726	3.2%	1,079	4.0%	1,497	4.8%	1,991	5.9%	2,722	7.1%	3,582	6.8%	11,597	**DOIT**
DEUs, Sugarcane production	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	5.4%	0	**DOIT**
Industry, Others	3.0%	157,189	4.2%	241,208	5.3%	342,097	6.4%	462,627	8.1%	645,306	9.7%	863,341	5.4%	2,711,767	**DOIT**
Industry, Total	**2.9%**	**171,356**	**3.9%**	**261,666**	**5.0%**	**370,066**	**6.1%**	**499,526**	**7.6%**	**695,073**	**9.1%**	**928,402**	**6.1%**	**2,926,089**	

Figure 17. Aggregation of energy-saving goal up to 2025, for the province/city

The table above shows the aggregation of energy-savings results up to 2025, linked data from sheets 2020, 2021, 2022, 2023, 2024 and 2025.

Note: Method of determining annual and period energy saving targets:

> ***Total annual energy savings target (period) (%) =*** *Total energy savings (TOE) of the year (period) / Total energy consumption of the year (period) (TOE)*

The compilation of energy-saving targets up to 2030, in the period of 2026-2030, the current annual energy-saving targets will be calculated by the previous year's saving targets + the average growth rate in the period of 2020-2025. Below is a display of the compilation results of energy-saving targets up to 2030.

COMPILATION OF ENERGY - SAVING TARGETS TO 2030

Sector	Target in 2020		Target in 2021		Growth rate	Target in 2022		Growth rate	Target in 2023		Growth rate	Target in 2024		Growth rate	Target in 2025		Growth rate	Target period		Average Growth	Implementation Responsibility
	(%)	(TOE)	(%)	(TOE)		(%)	(TOE)		(%)	(TOE)		(%)	(TOE)		(%)	(TOE)		(%)	(TOE)		
Electricity loss on the distribution grid	0.0%	0	0.0%	0	0.0%	0.0%	0	0.0%	0.0%	0	0.0%	0.0%	0	0.0%	0.0%	0	0.0%	0.0%	0	0.0%	Power Company
Transportation	2.2%	2,952	2.6%	3,592	0.3%	2.9%	4,304	0.3%	3.2%	5,093	0.3%	3.5%	5,967	0.3%	3.8%	6,932	0.3%	3.1%	28,841	0.3%	DOT
Agriculture	1.8%	1,805	2.2%	2,369	0.3%	2.5%	3,041	0.3%	2.8%	3,839	0.3%	3.1%	4,785	0.3%	3.4%	5,901	0.3%	2.7%	21,739	0.3%	DARD
Public sector	2.6%	1,462	3.0%	1,840	0.3%	3.3%	2,290	0.3%	3.6%	2,822	0.3%	3.9%	3,450	0.3%	4.2%	4,191	0.3%	3.5%	16,056	0.3%	District/County People's Committee
Residential	1.8%	7,632	2.0%	9,001	0.2%	2.2%	10,548	0.2%	2.3%	12,292	0.2%	2.5%	14,257	0.2%	2.6%	16,466	0.2%	2.3%	70,196	0.2%	District/County People's Committee
Trade and Services	1.5%	1,548	1.7%	2,002	0.3%	2.0%	2,543	0.3%	2.2%	3,187	0.3%	2.5%	3,954	0.3%	2.7%	4,867	0.3%	2.2%	18,100	0.3%	DOIT
Industry, Total	2.9%	171,356	3.9%	261,666	1.1%	5.0%	370,066	1.1%	6.1%	499,526	1.1%	7.6%	695,073	1.5%	9.1%	928,402	1.5%	6.1%	2,926,089	1.2%	DOIT
TOTAL	**2.7%**	**186,755**	**3.7%**	**280,471**	**1.0%**	**4.7%**	**392,791**	**1.0%**	**5.7%**	**526,759**	**1.0%**	**7.0%**	**727,485**	**1.4%**	**8.4%**	**966,760**	**1.4%**	**5.7%**	**3,081,021**	**1.1%**	

Sub-sector	Target in 2020		Target in 2021		Growth rate	Target in 2022		Growth rate	Target in 2023		Growth rate	Target in 2024		Growth rate	Target in 2025		Growth rate	Target period		Average Growth	Implementation Responsibility
	(%)	(TOE)	(%)	(TOE)		(%)	(TOE)		(%)	(TOE)		(%)	(TOE)		(%)	(TOE)		(%)	(TOE)		
DEUs, Steel	1.9%	1,007	2.5%	1,515	0.6%	3.0%	2,153	0.6%	3.6%	2,949	0.6%	4.4%	4,132	0.8%	5.2%	5,603	0.8%	5.9%	17,358	0.7%	**DOIT**
DEUs, Chemical	1.6%	2,143	2.1%	3,155	0.5%	2.6%	4,423	0.5%	3.0%	6,001	0.5%	3.6%	8,295	0.6%	4.2%	11,142	0.6%	5.3%	35,160	0.5%	**DOIT**
DEUs, Plastics	1.6%	1,058	2.0%	1,453	0.4%	2.4%	1,905	0.4%	2.9%	2,420	0.4%	3.4%	3,128	0.6%	4.0%	3,934	0.6%	8.8%	13,897	0.5%	**DOIT**
DEUs, Cement	2.2%	85	3.0%	124	0.8%	3.8%	169	0.8%	4.5%	221	0.8%	5.6%	298	1.1%	6.6%	387	1.1%	6.4%	1,284	0.9%	**DOIT**
DEUs, Textile	1.8%	8,855	2.4%	12,705	0.6%	3.0%	17,236	0.6%	3.5%	22,547	0.6%	4.3%	30,157	0.8%	5.0%	39,063	0.8%	6.8%	130,563	0.6%	**DOIT**
DEUs, Beer and	2.0%	294	2.7%	428	0.6%	3.3%	585	0.6%	4.0%	769	0.6%	4.9%	1,037	0.9%	5.8%	1,350	0.9%	8.2%	4,463	0.7%	**DOIT**
DEUs, Paper	2.3%	726	3.2%	1,079	0.8%	4.0%	1,497	0.8%	4.8%	1,991	0.8%	5.9%	2,722	1.1%	7.1%	3,582	1.1%	6.8%	11,597	0.9%	**DOIT**
DEUs, Sugarcane production	0.0%	0	0.0%	0	0.0%	0.0%	0	0.0%	0.0%	0	0.0%	0.0%	0	0.0%	0.0%	0	0.0%	5.4%	0	0.0%	**DOIT**
Industry, Others	3.0%	157,189	4.2%	241,208	1.1%	5.3%	342,097	1.1%	6.4%	462,627	1.1%	8.1%	645,306	1.6%	9.7%	863,341	1.6%	5.4%	2,711,767	1.3%	**DOIT**
Industry, Total	**2.9%**	**171,356**	**3.9%**	**261,666**	**1.1%**	**5.0%**	**370,066**	**1.1%**	**6.1%**	**499,526**	**1.1%**	**7.6%**	**695,073**	**1.5%**	**9.1%**	**928,402**	**1.5%**	**6.1%**	**2,926,089**	**1.2%**	

Sector	Target in 2026		Target in 2027		Target in 2028		Target in 2029		Target in 2030		Target period 2020 - 2030		Implementation Responsibility
	(%)	(TOE)	(%)	(TOE)	(%)	(TOE)	(%)	(TOE)	(%)	(TOE)	(%)	(TOE)	
Electricity loss on the distribution grid	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	Power Company
Transportation	4.2%	7,938	4.5%	9,036	4.8%	10,233	5.1%	11,538	5.4%	12,958	4.0%	80,544	DOT
Agriculture	3.8%	6,961	4.1%	8,152	4.4%	9,489	4.7%	10,987	5.0%	12,664	3.7%	69,992	DARD
Public sector	4.6%	4,889	4.9%	5,676	5.2%	6,561	5.5%	7,555	5.8%	8,671	4.5%	49,408	District/County People's Committee
Residential	2.8%	18,634	3.0%	21,019	3.1%	23,640	3.3%	26,517	3.4%	29,674	2.8%	189,681	District/County People's Committee
Trade and Services	3.0%	5,804	3.2%	6,880	3.5%	8,119	3.7%	9,543	4.0%	11,181	3.0%	59,626	DOIT
Industry, Total	10.3%	1,141,160	11.6%	1,383,071	12.8%	1,657,842	14.1%	1,969,657	15.3%	2,323,247	10.1%	11,401,067	DOIT
TOTAL	**9.6%**	**1,185,387**	**10.7%**	**1,433,835**	**11.9%**	**1,715,884**	**13.0%**	**2,035,797**	**14.2%**	**2,398,394**	9.4%	**11,850,318**	

Sub-sector	Target in 2026		Target in 2027		Target in 2028		Target in 2029		Target in 2030		Target period 2020 - 2030		Implementation Responsibility
	(%)	(TOE)	(%)	(TOE)	(%)	(TOE)	(%)	(TOE)	(%)	(TOE)	(%)	(TOE)	
DEUs, Steel	5.9%	6,950	6.5%	8,511	7.2%	10,315	7.9%	12,394	8.5%	14,786	5.9%	70,314	DOIT
DEUs, Chemical	4.8%	13,682	5.3%	16,600	5.8%	19,947	6.3%	23,778	6.8%	28,155	4.8%	137,322	DOIT
DEUs, Plastics	4.5%	4,630	5.0%	5,386	5.4%	6,206	5.9%	7,095	6.4%	8,057	4.3%	45,271	DOIT
DEUs, Cement	7.5%	475	8.4%	576	9.3%	690	10.2%	820	11.0%	966	7.3%	4,811	DOIT
DEUs, Textile	5.7%	47,545	6.3%	57,134	7.0%	67,954	7.6%	80,138	8.2%	93,838	5.5%	477,172	DOIT
DEUs, Beer and Beverage	6.5%	1,633	7.2%	1,948	8.0%	2,299	8.7%	2,689	9.5%	3,124	6.3%	16,155	DOIT
DEUs, Paper	8.0%	4,325	8.9%	5,149	9.9%	6,061	10.8%	7,071	11.8%	8,186	7.7%	42,388	DOIT
DEUs, Sugarcane production	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	#DIV/0!	0	DOIT
Industry, Others	11.1%	1,061,868	12.4%	1,287,681	13.7%	1,544,293	15.1%	1,835,681	16.4%	2,166,349	10.8%	,607,639	DOIT
Industry, Total	**10.3%**	**1,141,107**	**11.6%**	**1,382,984**	**12.8%**	**1,657,765**	**14.1%**	**1,969,667**	**15.3%**	**2,323,461**	10.1%	**11,401,073**	

Figure 18. Baseline and energy-saving targets to 2030

b) Other calculation interfaces

Besides the above parts, in Excel Tool also include 3 sheets of "Resources", "Total cost" "KPI- monitoring and evaluation system". Based on the scale, energy-saving targets, the amount of energy consumed to identify resources, KPIs are based on Section VII.

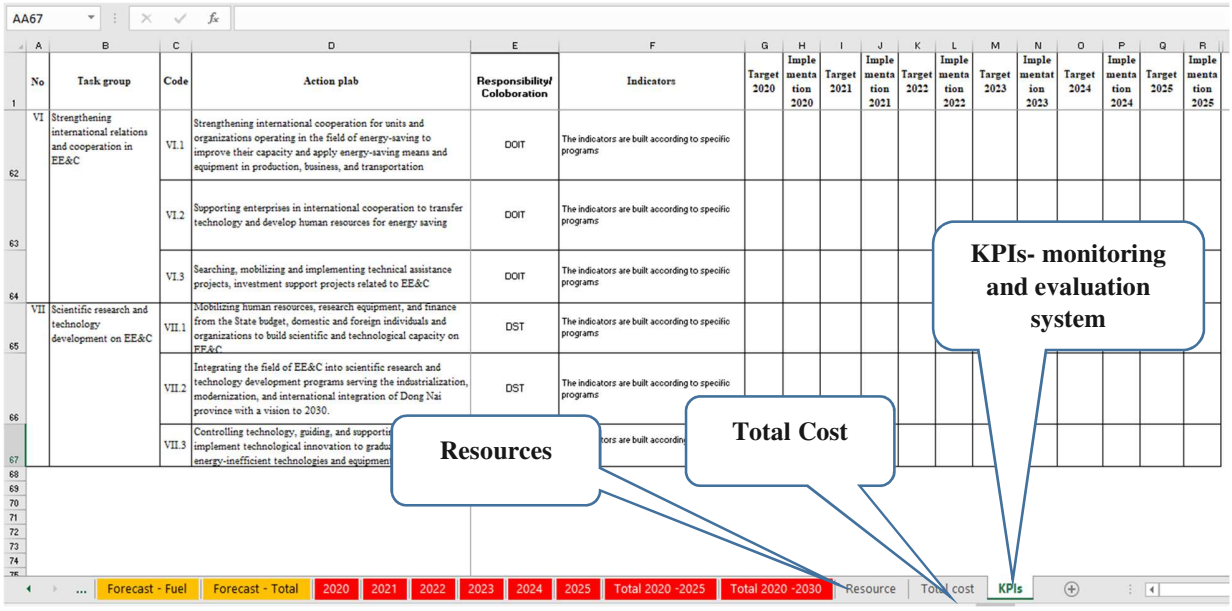


Figure 19. Interface of Sheet "KPI"

No	Task groups	Code	Action plan	Responsibility/ Coloboration	2020		2021		2022		2023		2024		2025	
					Budget	Others	Budget	Others	Budget	Others	Budget	Others	Budget	Others	Budget	Others
III	Provide technical assistance and promote investment projects on energy efficiency and conservation for production, renovation, and market conversion of vehicles, equipment, machinery, and production lines.	III.1	Implement energy-saving solutions in the steel industry	DOIT												
			Implement energy saving solutions in the chemical industry	DOIT												
			Implement energy saving solutions in the plastic industry	DOIT												
			Implement energy saving solutions in the cement industry	DOIT												
			Implement energy saving solutions in the textile industry	DOIT												
			Implementing energy saving solutions in the beverage industry	DOIT												
			Implement energy saving solutions in the paper industry	DOIT												
			Implement energy saving solutions in other industries	DOIT												
		III.2	Support the application of the ISO 50001: 2018 energy management model for DEUs	DOIT												
		III.3	Supporting the cost of conducting energy audits for energy-using facilities, especially those in the energy-consuming industries in the list of DEUs approved by the Prime Minister in order to build an advanced energy management model; improving technology lines, improving norms/energy consumption efficiency	DOIT												
		III.4	Disseminate and support enterprises to access renewable energy solutions (especially using solar energy), minimizing the need to use	DOIT												
		III.5	Support industrial production enterprises to convert and replace outdated and energy-consuming equipment with energy-saving equipment and build typical energy-saving models for some industry	DOIT												
		III.6	Applying energy saving solutions, using renewable energy sources in agricultural production activities	DARD												
		III.7	Establishing and planning the optimal irrigation system. Implementing reasonable operation and exploitation of the generating set in the	DOIT												
		III.8	Implement the energy-saving programs in the agricultural sector, prioritize the application of new equipment, technologies, and solutions on saving electricity and new energy in livestock production	DARD												

Figure 20. The interface of sheet "Resources"

A	B	C	D	E	F	G	H	I
No	Funding sources	Year						Total
		2020	2021	2022	2023	2024	2025	
1	State budget							0
2	Other Departments, Organzations, Enterprises							0
Total		0	0	0	0	0	0	0

Figure 21. The interface of sheet "Total cost"

No	Task group	Code	Action plab	Responsibility/ Coloboration	Indicators	Target 2020	Implementation 2020	Target 2021	Implementation 2021	Target 2022	Implementation 2022	Target 2023	Implementation 2023	Target 2024	Implementation 2024	Target 2025	Implementation 2025
I	Review, develop and perfect mechanisms and policies on energy efficiency and conservation	I.1	Step by step to develop a system of regulations and instructions for EE &C in the province as under the province's authority	Management Department	The proposed regulations submitted to the Ministry of Industry and Trade	30%											
		I.2	Research and give suggestions to develop the fuel consumption norms for means of transport and transport	DOT	The indicators are built according to specific programs	4											
		I.3	Research, give suggestions and develop technical regulations and standards to evaluate green buildings, buildings using energy-efficiency.	DOC	The indicators are built according to specific programs	1											
		I.4	Organizing award and commendation for organizations and individuals that well implement energy-saving solutions	DOIT	Regulations on motivating and rewarding	Promulgate regulations											
					Number of incentive and reward programs held	1											
		I.5	Annually require businesses to register the chart of load and electricity use demand, thereby building appropriate power supply plans, ensuring power quality for organizations, individuals, and enterprises to use	Dong Nai PC	The percentage of enterprises registered the chart of load and electricity demand	100%											

Figure 22. The interface of sheet "KPIs- monitoring and evaluation system"

ANNEX 1:

GUIDING THE DETERMINATION OF FINAL ENERGY AND DIVIDING ENERGY CONSUMPTION LEVEL

I. GUIDING ON DETERMINING FINAL ENERGY

1.1. Method for electricity production and transportation:

a) For Power plants:
- Energy consumption: Fuel input minus electricity delivered to the grid;
- KPI: electricity delivered divided with the fuel input (total plant efficiency).

b) Grid companies (national & local level):
- Energy consumption: electricity input minus electricity delivered;
- KPI: % loss in the grid-system.

c) End-user of electricity
- Energy consumption: electricity input;
- KPI: the normal KPI for the specific end-user.

1.2. Method for steam/heat production and transportation:

d) Boiler plants:
- Energy consumption: Fuel input minus steam/heat delivered (at the boundary of the end-user)
- KPI: steam/heat delivered divided with the fuel input (total plant efficiency).

e) End-user of steam/heat:
- Energy consumption: steam / heat input
- KPI: the normal KPI for the specific end-user;

1.3. Method of using energy in industrial processes

Sectors like fertilizer:

- Energy consumption: energy input (i.e. chemical latent energy is included)
- KPI: energy input divided with production volume (total plant efficiency);

II. GUIDING DIVISION OF PROVINCIAL ENERGY CONSUMPTION

2.1. Methods for transportation

Energy consumption according to ownership:

- Airport authorities: energy consumption in the airport
- Airline companies: energy consumption of the airplanes
- Port authorities: energy consumption in the airport
- Shipping companies: energy consumption of the shipping fleet
- Owner of train stations: energy consumption at the train station
- Railway companies: energy consumption of the trains
- Owner of the road installation: energy consumption of all fixed installations
- Transport companies: energy consumption of their fleet of busses, trucks, etc.

- Industries with own trucks: energy consumption to be included in the energy consumption of the industries
- Private transport: energy consumption to be included in the energy consumption of the house-holds)

2.2. Electricity power system

- Power production plants: Energy consumption of all operating and production equipment of the plant (self-consumption of electricity, fuel for operation ...) is under the provincial level where located the plants.
- Power transmission companies: Under national management.
- Power companies: Responsible for distribution of electricity and the energy consumption of all electrical loads (under provincial management).

ANNEX 2

AN EXAMPLE OF ACTION PLAN FOR DEPARTMENT OF INDUSTRY AND TRADE (DOIT)

XX PROVINCE

Energy Efficiency Action Plan

Version 2020

Based on the "Plan on energy efficiency and conservation in XX province in the period 2020 - 2025" dated xxxxx and the work performed by developing the statistic bases for the energy consumption in the XX province and setting of the energy efficiency objectives for 2025 is the action plan for the year 2020 generated.

The motivation for including the following specific actions in this plan is the fact that the major part of the energy consumption in XX province is for the industrial sector.

When the outcome of this plan is evaluated in Q1 2021 and development of the version 2021 of the energy efficiency action plan, it shall be considered if actions towards other sectors can be included or it is appropriate to continue the unique focus on the industrial sector.

Date:	07th March 2020
Version:	2020-01

No: 2020.01

Front-end-engineering energy review

Basis

Replacing equipment with more energy-efficient equipment can too expensive for a project to be financially feasible.

In the case where new capacity is needed or a new production shall be established it is much easier to use best available technology (BAT) regarding energy efficiency. It is only the extra cost for BAT compared with "the standard solution" that shall be paid by the energy saving.

It is recommended to use a discounted cash analysis over 10 years instead of a simple payback period. This will reflect the long-term benefits with BAT regarding energy efficiency.

Action Contents

Issuing a voluntary scheme for DEU's to make an energy review of all projects implementing an investment above one billion VND

Establish a provincial support budget to encourage enterprises to conduct voluntarily Front-end-engineering energy review

The energy review shall be made by an energy auditor in the stage of front-end-engineering before any decision about investment is taken. In the review shall the energy auditor shall evaluate the specific energy consumption of the proposed solution and if possible, suggest alternatives with higher energy efficiency. Copy of the report shall be sent to the DOIT.

The energy auditor must be a 3rd party and has no relation to the project development work

Make a campaign informing the DEU's about the regulation and the hereby benefits

The campaign can be a combination of direct mail to all DEU's and of meetings/workshops explaining the regulation and its benefits and encourage them to conduct this action voluntarily.

Timeline

November 2020, DOIT sends an application to MOIT to receive funding to the provincial support budget.
December 2020, finalize the regulation for the provincial support scheme
January 2021, direct mail to all DEU's
February & March 2020, meetings / workshops
1st April 2021, the provincial support scheme is launched
July 2021, following up on Q2 2021 submission of reports

October 2021, following up on Q3 2021 submission of reports January 2022, following up on Q4 2021 submission of reports April 2022, following up on Q1 2022 submission of reports
Resources: Annual operating from the provincial budget: … VND

No: 2020.02

Enlargement of the benchmark implementation

Basis

Meeting the Energy consumption norms (SEC – Targets) carry the fulfillment of overall objectives

The benchmarking circulars determine precise targets for specific energy consumption in several important sub-sectors. The SEC-targets are designed on basis of profound analysis and by meeting the SEC-targets the subsectors will fulfill the objectives of Decision 280

The SEC-targets are clear and by using them all enterprises will have the same framework in the entire nation

Action Contents:

Information campaign

The campaign can be a combination of direct mail to all relevant enterprises and of meetings/workshops explaining the circulars and their benefits.

Case stories with enterprises that fulfill the SEC-targets and benefits from low energy costs can be spread.

Support scheme

Establish a provincial support budget to grant up to 50% of the costs of the conceptual design of energy efficiency improvements related to fulfilling the SEC-targets.

Close follow up on submission of benchmarking reports

Prompt feedback to enterprises that violate Decision 280. Taking the enterprises from the top energy consumer and downwards for a strengthen effort. The top energy consumer that violate Decision 280 will be taken out for inspection in each subsector. All enterprises with significant energy consumption and that violate Decision 280 will get a letter addressed to the CEO expressing the gravity of the violation.

Timeline

Lifting the present compliance rate of about 30% to:

- 50% by the end of 2020
- 70% by the end of 2021
- 90% by the end of 2022
- 100% by the end of 2023

November 2020, DOIT sends an application to MOIT to receive funding to the provincial support budget.

December 2020, finalize the regulation for the provincial support scheme

January 2021, direct mail to all DEU's

February & March 2020, meetings / workshops 1st April 2021, the provincial support scheme is launched
Resources - Supporting from the provincial budget: ... VND - Other funding sources: ... VND

No: 2020.03

Replication of the use of energy management systems

Bases

All DEUs must implement an energy management system for their units. The sooner the better it is implemented it will contribute to the general energy-saving target by 2025

It is a common experience that an energy management system helps with keeping the focus on energy and as a system of continuous improvement it can incorporate energy efficiency in the general operation of the enterprise.

Many businesses only establish energy management systems as a way to complete the requested records. Many systems not been implemented actually in reality. Should have support for enterprises on maintaining and implementing energy management systems in practice.

Action Contents:

Information campaign

The campaign can be a combination of direct mail to all relevant enterprises and of meetings/workshops explaining the circulars and their benefits.

Case stories about enterprises benefiting from the energy management system should be widely disseminated.

Support scheme

Establishing a provincial budget on supporting enterprises on the pilot implementation and real operation of energy management systems, then use them as the models to communicate to other enterprises.

Close follow up on the implementation of energy management systems

The top ten energy consumers without an energy management system in use will be taken out for inspection.

Timeline

Lifting the present implementation rate of about xx% to

yy% by the end of 2020

90% by the end of 2021

100% by the end of 2020

November 2020, DOIT sends an application to MOIT to receive funding to the provincial support budget.

December 2020, finalize the regulation for the provincial support scheme

January 2021, direct mail to all DEU's

February & March 2020, meetings / workshops

1st April 2021, the provincial support scheme is launched
Resources: - Supporting from the provincial budget: ... VND - Other funding sources: ... VND