

Regulatory Indicators for Sustainable Energy (RISE) 2016 Country Data - Thailand

Energy Efficiency

| Indicator | Score |
|---|--------------|
| National energy efficiency planning | 91.67 |
| Energy efficiency entities | 100 |
| Information provided to consumers about electricity usage | 62.5 |
| EE incentives from electricity rate structures | 62.96 |
| Incentives & mandates: large consumers | 100 |
| Incentives & mandates: public sector | 37.5 |
| Incentives & mandates: utilities | 62.5 |
| Financing mechanisms for energy efficiency | 91.67 |
| Minimum energy efficiency performance standards | 33.33 |
| Energy labeling systems | 58.33 |
| Building energy codes | 50 |
| Carbon Pricing | 0 |
| Total | 62.54 |

Renewable Energy

| Indicator | Score |
|--|--------------|
| Legal framework for renewable energy | 50 |
| Planning for renewable energy expansion | 82 |
| Incentives and regulatory support for renewable energy | 63 |
| Attributes of financial and regulatory incentives | 100 |
| Network connection and pricing | 58 |
| Counterparty risk | 64 |
| Carbon pricing and monitoring | 0 |
| Total | 59.57 |

Regulatory Indicators for Sustainable Energy (RISE)

Overall Score

40.7

Energy Efficiency

| National energy efficiency planning | Score | 91.67 |
|--|-------|---|
| Is there legislation or a national action plan that aims to increase EE? | | Yes |
| Name of EE legislation or action plan | | Thailand Energy Efficiency Development Plan 215-236 |
| Is there an energy efficiency goal or target at the national level? | | Yes |
| National target details | | To reduce energy intensity (EI) by 25% in 2030 or 30% in 2036, in comparison with 2010. Units are KTOE savings. |
| Is there a target for the residential sector? | | Yes |
| Target details | | 13,633 GWh in Electricity |
| Does the target have a milestone or deadline? | | Yes |
| Is there a commercial services sector target? | | Yes |
| Target details | | 37,052 GWh in Electricity |
| Does the target have a milestone or deadline? | | Yes |
| Is there an industrial sector target? | | Yes |
| Target details | | 31,843 GWh in Electricity |
| Does the target have a milestone or deadline? | | Yes |
| Is there a power sector target? | | No |

Regulatory Indicators for Sustainable Energy (RISE)

| | |
|---|----|
| Target details | 0 |
| Does the target have a milestone or deadline? | No |

| Energy efficiency entities | Score | 100 |
|--|---|-----|
| Are there governmental and/or independent bodies dedicated to setting EE strategy? | Yes | |
| Name of entity | Energy Policy and Planning Office | |
| Are there governmental and/or independent bodies dedicated to setting EE standards? | Yes | |
| Name of entity | Department of Alternative Energy Development and Efficiency, Electricity Generating Authority of Thailand | |
| Are there governmental and/or independent bodies dedicated to regulating EE activities of energy suppliers? | Yes | |
| Name of entity | Energy Regulatory Commission | |
| Are there governmental and/or independent bodies dedicated to regulating EE activities of energy consumers? | Yes | |
| Name of entity | Department of Alternative Energy Development and Efficiency | |
| Are there governmental and/or independent bodies dedicated to certifying compliance with equipment EE standards? | Yes | |
| Name of entity | Department of Alternative Energy | |

Regulatory Indicators for Sustainable Energy (RISE)

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|--|--|
| | Development and Efficiency, Electricity Generating Authority of Thailand, Thailand Industrial Standard Institute |
| Are there governmental and/or independent bodies dedicated to certifying compliance with building EE standards? | Yes |
| Name of entity | Department of Alternative Energy Development and Efficiency |
| Are there governmental and/or independent bodies dedicated to selecting and/or approving third party auditors tasked with certifying EE standards? | Yes |
| Name of entity | Department of Alternative Energy Development and Efficiency |

| Information provided to consumers about electricity usage | Score | 62.5 |
|--|--------------|-------------|
| Residential customers | | |
| Is it mandatory for utilities to provide reports of their energy usage, in a bill or by other means? | Yes | |
| Commercial customers | | |
| Is it mandatory for utilities to provide reports of their energy usage, in a bill or by other means? | Yes | |
| Industrial customers | | |
| Is it mandatory for utilities to provide reports of their energy usage, in a bill or by other means? | Yes | |

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|---|-----|
| Residential customers | |
| At what intervals do customers receive these reports (times per year)? | 12 |
| Do the reports include the price levels customers pay for energy usage? | Yes |
| Commercial customers | |
| At what intervals do customers receive these reports (times per year)? | 12 |
| Do the reports include the price levels customers pay for energy usage? | Yes |
| Industrial customers | |
| At what intervals do customers receive these reports (times per year)? | 12 |
| Do the reports include the price levels customers pay for energy usage? | Yes |
| Does the regulator track utilities' compliance with laws for providing energy usage information to customers? | Yes |
| Residential customers | |
| Do customers receive a bill or report which compares them to other users in the same region and/or usage class? | No |
| Method of comparison | N/A |
| Commercial customers | |
| Do customers receive a bill or report which compares them to other users in the same region and/or usage class? | No |
| Method of comparison | N/A |

Regulatory Indicators for Sustainable Energy (RISE)

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|---|-----|
| Industrial customers | |
| Do customers receive a bill or report which compares them to other users in the same region and/or usage class? | No |
| Method of comparison | N/A |
| Residential customers | |
| Do customers receive a bill or report that shows their energy usage compared to previous bills or reports over time? | Yes |
| Commercial customers | |
| Do customers receive a bill or report that shows their energy usage compared to previous bills or reports over time? | Yes |
| Industrial customers | |
| Do customers receive a bill or report that shows their energy usage compared to previous bills or reports over time? | Yes |
| All customers | |
| Can customers access real time feedback on energy usage (for either prepaid or post-paid systems)? | No |
| Do customers have the ability to manage energy usage levels remotely (through apps or other technology mediums that can track real time usage)? | No |

| EE incentives from electricity rate structures | Score | 62.96 |
|---|--------------|--------------|
| Residential customers | | |
| Are customers charged a flat fee (per connection)? | No | |
| Are customers charged constant block rates? | No | |

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|---|-----|
| Are customers charged declining block rates? | No |
| Are customers charged increasing block rates? | Yes |
| Commercial customers | |
| Are customers charged a flat fee (per connection)? | No |
| Are customers charged constant block rates? | Yes |
| Are customers charged declining block rates? | No |
| Are customers charged increasing block rates? | Yes |
| Industrial customers | |
| Are customers charged a flat fee (per connection)? | No |
| Are customers charged constant block rates? | Yes |
| Are customers charged declining block rates? | No |
| Are customers charged increasing block rates? | No |
| Residential customers | |
| Do customers pay energy charges (per kWh)? | Yes |
| Do customers pay demand charges (per kW)? | No |
| Do customers pay reactive power charges (per kVAR)? | No |
| Commercial customers | |
| Do customers pay energy charges (per kWh)? | Yes |
| Do customers pay demand charges (per kW)? | Yes |
| Do customers pay reactive power charges (per kVAR)? | Yes |

Regulatory Indicators for Sustainable Energy (RISE)

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|---|-----|
| Industrial customers | |
| Do customers pay energy charges (per kWh)? | Yes |
| Do customers pay demand charges (per kW)? | Yes |
| Do customers pay reactive power charges (per kVAR)? | Yes |
| Residential customers | |
| Are customers charged based on real-time pricing? | No |
| Are customers charged based on variable peak pricing? | No |
| Are customers charged based on critical peak pricing? | No |
| Are tariffs adjusted according to seasons? | No |
| Do customers pay according to time-of-day electricity use or receive peak-time rebates? | No |
| Commercial customers | |
| Are customers charged based on real-time pricing? | No |
| Are customers charged based on variable peak pricing? | No |
| Are customers charged based on critical peak pricing? | No |
| Are tariffs adjusted according to seasons? | No |
| Do customers pay according to time-of-day electricity use or receive peak-time rebates? | No |
| Industrial customers | |
| Are customers charged based on real-time pricing? | No |
| Are customers charged based on variable peak pricing? | No |

Regulatory Indicators for Sustainable Energy (RISE)

| | |
|---|----|
| Are customers charged based on critical peak pricing? | No |
| Are tariffs adjusted according to seasons? | No |
| Do customers pay according to time-of-day electricity use or receive peak-time rebates? | No |

| Incentives & mandates: large consumers | Score | 100 |
|--|---|-----|
| What is the threshold for classifying large consumers? | Electricity meter > 1,000 kW, Transformer >1,175 kVA, Energy Usage > 20 million MJ per year | |
| Large consumer EE mandate/incentive regulations | Energy Data Reporting system in Thailand | |
| Is it required for the consumption and/or savings of large-scale energy users to be tracked and documented on a regular basis? | Yes | |
| Are efficiency targets mandated for large consumers? | No | |
| Details | 0 | |
| Are energy audits mandated for large consumers? | No | |
| Are energy efficiency progress reports mandated for large consumers? | Yes | |
| Interval of reports | 1 Year | |
| Are energy-management systems mandated for large consumers? | No | |
| Details | 0 | |
| Are there penalties in place for non-compliance with regulatory obligations for large consumers? | Yes | |

Regulatory Indicators for Sustainable Energy (RISE)

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|--|---|
| Is there a measurement and verification program in place? | Yes |
| Is verification done by a third party? | Yes |
| Are there financial incentives for large consumers to invest in energy efficiency? | Yes |
| Details | Equity investment, equipment leasing under the ESCO Revolving Fund Phase III which are available for all users not only large scale users |
| Are there tax incentives for large consumers to invest in energy efficiency? | Yes |
| Are there other incentives for large consumers to invest in energy efficiency? | No |
| Details | 0 |
| Is there a program to publicly recognize large-scale users that have achieved significant energy savings measures? | Yes |
| Are energy savings and/or financial savings publicized? | Yes |
| Does the program offer assistance (from a government or independent entity) to large-scale users to identify energy savings investments opportunities? | Yes |
| Primary Energy Consumption (MJ - latest GTF data from 2012) | 669.8297143 |

| Incentives & mandates: public sector | Score | 37.5 |
|--|-------|------|
| Are there binding energy savings obligations for public buildings? | No | |
| Are energy savings from efficiency activities at public buildings tracked (either in-house or by a third party)? | Yes | |

Regulatory Indicators for Sustainable Energy (RISE)

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|--|-----|
| Are there binding energy savings obligations for other public facilities (may include water supply, wastewater services, municipal solid waste, street lighting, transportation, and heat supply)? | No |
| Are energy savings from efficiency activities at other public facilities tracked? | No |
| Is there a specific policy or mandated guidelines for public procurement of energy-efficient products and services? | Yes |
| Public procurement guidelines for EE | |
| Do public budgeting regulations and practices allow public entities to retain energy savings? | No |
| Public budgeting regulations for EE | |

| Incentives & mandates: utilities | Score | 62.5 |
|---|--|------|
| Name of utility energy efficiency regulation program | Thailand Energy Efficiency Development Plan 215-236 | |
| Electricity generation | | |
| Are utilities required to carry out energy efficiency activities in this area? | Yes | |
| Details | N/A | |
| Are energy savings or other target indicators measured to track performance in meeting EE requirements? | Yes | |
| Are the requirements measured/validated by an independent third party? | Yes | |
| Are there penalties in place for non-compliance with EE requirements? | No | |

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|---|---------------------|
| Are there mandates or incentives for new and/or brownfield co-generation? | No |
| Transmission & distribution | |
| Are utilities required to carry out energy efficiency activities in this area? | Yes |
| Details | Transmission Losses |
| Are energy savings or other target indicators measured to track performance in meeting EE requirements? | Yes |
| Are the requirements measured/validated by an independent third party? | Yes |
| Are there penalties in place for non-compliance with EE requirements? | No |
| Demand-side management - | |
| Are utilities required to carry out energy efficiency activities in this area? | Yes |
| Details | kWh savings |
| Are energy savings or other target indicators measured to track performance in meeting EE requirements? | Yes |
| Are the requirements measured/validated by an independent third party? | Yes |
| Are there penalties in place for non-compliance with EE requirements? | No |
| Is there a demand-side management department within the selected utility? | Yes |
| Do utilities provide customers incentives for demand response, such as peak-time rebates? | Yes |

Regulatory Indicators for Sustainable Energy (RISE)

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|--|-----|
| Is there public budget funding available for utilities to recover costs associated with or revenue lost from mandated energy efficiency activities? | Yes |
| Is there compensation for revenue losses via a tracking account available for utilities to recover costs associated with or revenue lost from mandated energy efficiency activities? | No |
| Are these available as solely market-driven financing mechanisms without any direct government approval, subsidy, authorization or other mediation procedure? | No |
| Are these available as government-driven financing mechanisms? | No |
| Are there credit lines available for utilities to recover costs associated with or revenue lost from mandated energy efficiency activities? | No |
| Are these available as solely market-driven financing mechanisms without any direct government approval, subsidy, authorization or other mediation procedure? | No |
| Are these available as government-driven financing mechanisms? | No |
| Are there partial risk guarantees available for utilities to recover costs associated with or revenue lost from mandated energy efficiency activities? | No |
| Are these available as solely market-driven financing mechanisms without any direct government approval, subsidy, authorization or other mediation procedure? | No |
| Are these available as government-driven financing mechanisms? | No |
| Is there program cost recovery available for utilities to recover costs associated with or revenue lost from mandated energy efficiency activities? | No |
| Are these available as solely market-driven financing mechanisms without any direct government approval, subsidy, authorization or other mediation procedure? | No |

Regulatory Indicators for Sustainable Energy (RISE)

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|---|----|
| Are these available as government-driven financing mechanisms? | No |
| Is there ESCO financing available for utilities to recover costs associated with or revenue lost from mandated energy efficiency activities? | No |
| Are these available as solely market-driven financing mechanisms without any direct government approval, subsidy, authorization or other mediation procedure? | No |
| Are these available as government-driven financing mechanisms? | No |
| Is there on-bill financing/re-payment available for utilities to recover costs associated with or revenue lost from mandated energy efficiency activities? | No |
| Are these available as solely market-driven financing mechanisms without any direct government approval, subsidy, authorization or other mediation procedure? | No |
| Are these available as government-driven financing mechanisms? | No |
| Are there any other financing mechanisms available for utilities to recover costs associated with or revenue lost from mandated energy efficiency activities? | 0 |
| Are these available as solely market-driven financing mechanisms without any direct government approval, subsidy, authorization or other mediation procedure? | No |
| Are these available as government-driven financing mechanisms? | No |

| Financing mechanisms for energy efficiency | Score | 91.67 |
|---|--------------|--------------|
| Residential sector | | |

Regulatory Indicators for Sustainable Energy (RISE)

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|---|-----|
| Are there tax incentives available for energy efficiency investments? | Yes |
| Are there discounted "green" mortgages available for energy efficiency investments? | Yes |
| Is on-bill financing/re-payment available for energy efficiency investments? | No |
| Are credit lines available for energy efficiency investments? | No |
| Are energy services agreements or ESCOs available for energy efficiency investments? | No |
| Are green bonds available for energy efficiency investments? | No |
| Is vendor credit and/or leasing available for energy efficiency investments? | Yes |
| Are partial risk guarantees available for energy efficiency investments? | No |
| Are there any other financing mechanisms available for energy efficiency investments? | No |
| Are these available as solely market-driven financing mechanisms without any direct government approval, subsidy, authorization or other mediation procedure? | Yes |
| Are these available as government-driven financing mechanisms? | Yes |
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| Are these available as government-driven financing mechanisms? | No |
| Details | |
| Are these available as solely market-driven financing mechanisms without any direct government approval, subsidy, authorization or other mediation procedure? | No |
| Are these available as government-driven financing mechanisms? | No |
| Commercial services sector | |
| Are there tax incentives available for energy efficiency investments? | Yes |
| Are there discounted "green" mortgages available for energy efficiency investments? | Yes |
| Is on-bill financing/re-payment available for energy efficiency investments? | No |
| Are credit lines available for energy efficiency investments? | Yes |
| Are energy services agreements or ESCOs available for energy efficiency investments? | Yes |

Regulatory Indicators for Sustainable Energy (RISE)

| | |
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| Is vendor credit and/or leasing available for energy efficiency investments? | Yes |
| Are partial risk guarantees available for energy efficiency investments? | Yes |
| Are there any other financing mechanisms available for energy efficiency investments? | No |
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Regulatory Indicators for Sustainable Energy (RISE)

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| Are these available as government-driven financing mechanisms? | No |
| Details | |
| Are these available as solely market-driven financing mechanisms without any direct government approval, subsidy, authorization or other mediation procedure? | No |
| Are these available as government-driven financing mechanisms? | No |
| Industrial sector | |
| Are there tax incentives available for energy efficiency investments? | Yes |
| Are there discounted "green" mortgages available for energy efficiency investments? | No |
| Is on-bill financing/re-payment available for energy efficiency investments? | No |
| Are credit lines available for energy efficiency investments? | Yes |
| Are energy services agreements or ESCOs available for energy efficiency investments? | Yes |

Regulatory Indicators for Sustainable Energy (RISE)

| | |
|---|-----|
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| Is vendor credit and/or leasing available for energy efficiency investments? | Yes |
| Are partial risk guarantees available for energy efficiency investments? | Yes |
| Are there any other financing mechanisms available for energy efficiency investments? | No |
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Regulatory Indicators for Sustainable Energy (RISE)

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| Are these available as government-driven financing mechanisms? | No |
| Details | |
| Are these available as solely market-driven financing mechanisms without any direct government approval, subsidy, authorization or other mediation procedure? | No |
| Are these available as government-driven financing mechanisms? | No |

| Minimum energy efficiency performance standards | Score | 33.33 |
|---|--------------|---|
| EE standards regulations | | Energy Standards & Labeling (ES&L) Implementation in Thailand |
| Refrigerators | | |
| Have minimum energy performance standards been adopted? | Yes | |
| Details of standards | | Unit Energy Consumption(kWh/year) E.g._x000D_One door |

Regulatory Indicators for Sustainable Energy (RISE)

| | |
|---|---|
| | refrigerators, $AV \geq 100$ litres, $158 + (0.43 * AV)$, $AV < 100$ litres, $278 + (0.74$ |
| Is there a verification program in place? | Yes |
| Is it carried out by a third party? | Yes |
| Is there a penalty for non-compliance with energy efficiency standards? | Yes |
| Are the standards based on external/international standards? | Yes |
| Air conditioners | |
| Have minimum energy performance standards been adopted? | Yes |
| Details of standards | Minimum Energy Efficiency Ratio (EER), W/W 2.53-2.82 |
| Is there a verification program in place? | Yes |
| Is it carried out by a third party? | Yes |
| Is there a penalty for non-compliance with energy efficiency standards? | Yes |
| Are the standards based on external/international standards? | Yes |
| Lighting equipment | |
| Have minimum energy performance standards been adopted? | No |
| Details of standards | 0 |
| Is there a verification program in place? | No |
| Is it carried out by a third party? | No |
| Is there a penalty for non-compliance with energy efficiency standards? | No |

Regulatory Indicators for Sustainable Energy (RISE)

| | |
|---|----|
| Are the standards based on external/international standards? | No |
| Industrial electric motors | |
| Have minimum energy performance standards been adopted? | No |
| Details of standards | 0 |
| Is there a verification program in place? | No |
| Is it carried out by a third party? | No |
| Is there a penalty for non-compliance with energy efficiency standards? | No |
| Are the standards based on external/international standards? | No |
| Other industrial equipment | |
| Have minimum energy performance standards been adopted? | No |
| Details of standards | 0 |
| Is there a verification program in place? | No |
| Is it carried out by a third party? | No |
| Is there a penalty for non-compliance with energy efficiency standards? | No |
| Are the standards based on external/international standards? | No |
| Light duty vehicles | |
| Have minimum energy performance standards been adopted? | No |
| Details of standards | 0 |
| Is there a verification program in place? | No |

Regulatory Indicators for Sustainable Energy (RISE)

| | |
|---|----|
| Is it carried out by a third party? | No |
| Is there a penalty for non-compliance with energy efficiency standards? | No |
| Are the standards based on external/international standards? | No |
| Heavy duty vehicles | |
| Have minimum energy performance standards been adopted? | No |
| Details of standards | 0 |
| Is there a verification program in place? | No |
| Is it carried out by a third party? | No |
| Is there a penalty for non-compliance with energy efficiency standards? | No |
| Are the standards based on external/international standards? | No |

| Energy labeling systems | Score | 58.33 |
|---|--------------|--------------|
| Refrigerators | | |
| Have energy efficiency labeling schemes been adopted? | Yes | |
| Is the labeling scheme mandatory? | Yes | |
| Is the labeling scheme based on external/international standards? | Yes | |
| Air conditioners | | |
| Have energy efficiency labeling schemes been adopted? | Yes | |
| Is the labeling scheme mandatory? | Yes | |

Regulatory Indicators for Sustainable Energy (RISE)

| | |
|---|-----|
| Is the labeling scheme based on external/international standards? | Yes |
| Lighting equipment | |
| Have energy efficiency labeling schemes been adopted? | Yes |
| Is the labeling scheme mandatory? | No |
| Is the labeling scheme based on external/international standards? | Yes |
| Industrial electric motors | |
| Have energy efficiency labeling schemes been adopted? | Yes |
| Is the labeling scheme mandatory? | No |
| Is the labeling scheme based on external/international standards? | Yes |
| Other industrial equipment | |
| Have energy efficiency labeling schemes been adopted? | Yes |
| Is the labeling scheme mandatory? | No |
| Is the labeling scheme based on external/international standards? | Yes |
| Light duty vehicles | |
| Have energy efficiency labeling schemes been adopted? | No |
| Is the labeling scheme mandatory? | No |
| Is the labeling scheme based on external/international standards? | No |
| Heavy duty vehicles | |

Regulatory Indicators for Sustainable Energy (RISE)

| | |
|---|----|
| Have energy efficiency labeling schemes been adopted? | No |
| Is the labeling scheme mandatory? | No |
| Is the labeling scheme based on external/international standards? | No |

| Building energy codes | Score | 50 |
|--|---|-----------|
| Are there energy efficiency codes for new residential buildings? | No | |
| Are there energy efficiency codes for new commercial buildings? | Yes | |
| Is the energy efficiency code for new residential buildings its own stand-alone, separate code or part of the overall building code? | No | |
| Is the energy efficiency code for new commercial buildings its own stand-alone, separate code or part of the overall building code? | Yes | |
| Is there any provision for regular updates to the code for new residential buildings? | No | |
| Is there any provision for regular updates to the code for new commercial buildings? | Yes | |
| EE building code regulations | Ministerial Regulation on Types, Size, Standards, Criteria and Methodology in Designing Energy Conservation Buildings B.E. 2552 | |
| When was the code last updated for residential buildings? | 0 | |
| When was the code last updated for commercial buildings? | 2009 | |
| Is there a system to ensure compliance with building energy efficiency codes? | Yes | |

Regulatory Indicators for Sustainable Energy (RISE)

| | |
|---|-----|
| Is it carried out by a third party? | No |
| Are renovated residential buildings required to meet a building energy codee? | No |
| Are renovated commercial buildings required to meet a building energy code? | Yes |
| Is the energy efficiency code for renovated residential buildings different from the code for new buildings? | No |
| Is the energy efficiency code for renovated commercial buildings different from the code for new buildings? | No |
| Is the energy efficiency code for renovated residential buildings its own stand-alone, separate code or part of the overall building code? | No |
| Is the energy efficiency code for renovated commercial buildings its own stand-alone, separate code or part of the overall building code? | Yes |
| Is there any provision for regular updates to the code for renovated residential buildings? | No |
| Is there any provision for regular updates to the code for renovated commercial buildings? | Yes |
| Is there a mandatory standardized rating or labeling system for the energy performance of existing buildings? | No |
| Is the labeling scheme or rating adopted from external standards? | No |
| Are commercial and residential buildings required to disclose property energy usage at the point of sale or when leased? | No |
| Are large commercial and residential buildings required to disclose property energy usage annually? | No |
| Are there mandates or targets for new building stocks to achieve high quality energy efficiency certifications, such as LEED (Leadership in Energy & Environmental Design) (e.g. percentage | Yes |

Regulatory Indicators for Sustainable Energy (RISE)

| | |
|--|---------------------------------------|
| of new building stocks that must be LEED certified)? | |
| Details | Low interest rate loan/tax incentives |
| LEED incentives | No |
| Local program details | Building Energy Code |

| Carbon Pricing | Score | 0 |
|--|--------------|----------|
| Is there a carbon pricing mechanism in place? | | No |
| For any carbon pricing mechanism (e.g. carbon tax, emission trading system), what is the portion of national GHG emissions covered)? | | 0 |
| Is there a monitoring, reporting and verification system for greenhouse gas emissions in place? | | No |

Renewable Energy

| Legal framework for renewable energy | Score | 50 |
|--|--------------|-----------|
| Does a legal framework for renewable energy development exist? | | No |
| Name of the Law | | 0 |
| Is private sector ownership of renewable energy generation legally authorized? | | Yes |

| Planning for renewable energy expansion | Score | 82 |
|---|--------------|-----------|
| Does an official renewable energy target exist? | | Yes |

Regulatory Indicators for Sustainable Energy (RISE)

| | |
|--|--|
| Overall target | All three. Percentage of Electricity Generation (326,119 GWh), Cumulative Installed Capacity (19,634.4 MW), Capacity Added during 2015-2036 (12,144 MW), Percentage of Fuel Mix (20.11%) |
| Solar target | 6,000 MW |
| Wind target | 3,002 MW |
| Hydro target | Small 376 MW, Large 2,906 MW |
| Biomass target | 5,570 MW |
| Geothermal target | 0.3 MW |
| Does a renewable energy action plan or strategy to attain the target exist? | Yes |
| Name of the action plan | 0 |
| Does the plan or strategy define the amount of investment necessary to meet the RE target? | No |
| The amount of investment identified | 0 |
| Is there an institution responsible for tracking progress in renewable energy development? | Yes |
| Name of the institution | 0 |
| Does an electricity generation plan that includes renewable energy development exist? | Yes |
| Name of the generation plan | 0 |

Regulatory Indicators for Sustainable Energy (RISE)

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| Is the expansion plan based on a probabilistic approach? | Yes |
| Does the current transmission planning consider renewable energy scale-up? | Yes |
| Name of the transmission plan | 0 |
| Has the country conducted a variable renewable energy integration study? | Yes |
| Name of the integration study | 0 |
| Year of the integration study | 2015 |
| Does the country have sufficient resource abundance to warrant a solar resource atlas? | Yes |
| Does the government publish or endorse a solar resource atlas or other data on the abundance and quality of the resource? | Yes |
| Solar atlas is validated by at least 5 ground-based measurements taken for a period of at least a year; | Yes |
| Solar atlas has a spatial resolution of 5km or less; | Yes |
| Solar atlas is based on modeling inputs covering at least a 10 year period; | Yes |
| Solar atlas is accompanied by an explanation of the methodology and instrumentation | Yes |
| Has the country carried out strategic planning or produced zoning guidance to inform the commercial development of solar resources? | No |
| Has the solar resource planning or zoning guidance been undertaken as part of a strategic environmental and social assessment or equivalent process? | No |
| Are the solar resource planning or zoning guidance outputs publically available? | No |

Regulatory Indicators for Sustainable Energy (RISE)

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|---|-----|
| Does the country have sufficient resource abundance to warrant a wind resource atlas? | Yes |
| Does the government publish or endorse a wind resource atlas or other data on the abundance and quality of the resource? | Yes |
| Wind atlas is validated by at least 5 ground-based measurements taken for a period of at least a year; | No |
| Wind atlas has a spatial resolution of 5km or less; | No |
| Wind atlas is based on modeling inputs covering at least a 10 year period; | No |
| Wind atlas is accompanied by an explanation of the methodology and instrumentation | No |
| Has the country carried out strategic planning or produced zoning guidance to inform the commercial development of wind resources? | Yes |
| Has the wind resource planning or zoning guidance been undertaken as part of a strategic environmental and social assessment or equivalent process? | Yes |
| Are the wind resource planning or zoning guidance outputs publically available? | Yes |
| Does the country have sufficient resource abundance to warrant a hydro resource atlas? | Yes |
| Does the country publish or endorse a national hydro resource map or atlas? | No |
| Hydro atlas is validated by ground-based water run-off data and/or site surveys from potential sites; | No |
| Hydro atlas is accompanied by an explanation of the methodology and instrumentation | No |
| Has the country carried out strategic planning or produced zoning guidance to inform the commercial development of hydro resources? | No |

Regulatory Indicators for Sustainable Energy (RISE)

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| Has the hydro resource planning or zoning guidance been undertaken as part of a strategic environmental and social assessment or equivalent process? | No |
| Are the hydro resource planning or zoning guidance outputs publically available? | No |
| Does the country have sufficient resource abundance to warrant a biomass resource atlas? | Yes |
| Does the country publish or endorse a national biomass resource map or atlas? | Yes |
| Biomass atlas is validated by ground-based survey or officially reported data; | Yes |
| Biomass atlas is accompanied by an explanation of the methodology and instrumentation. | Yes |
| Has the biomass resource planning or zoning guidance been undertaken as part of a strategic environmental and social assessment or equivalent process? | Yes |
| Are the biomass resource planning or zoning guidance outputs publically available? | Yes |
| Does the country have sufficient resource abundance to warrant a geothermal resource atlas? | Yes |
| Does the country publish or endorse a national geothermal resource map or atlas? | Yes |
| The governmentn has collected and recorded well data at potential geothermal sites? | No |
| Does the government publish a national geological map? | Yes |
| The government has supported surface exploration (geological; geochemical; temp; gradient) at potential sites? | Yes |
| The government has supported test drilling at at least one site (slim bore or full well)? | No |

Regulatory Indicators for Sustainable Energy (RISE)

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| The government has supported the creation of a reservoir model at at least one site? | No |
| Has the country carried out strategic geothermal resource planning or produced zoning guidance to inform the commercial development of the resource? | No |
| Has the geothermal resource planning or zoning guidance been undertaken as part of a strategic environmental and social assessment or equivalent process?nt process? | No |
| Are the geothermal resource planning or zoning guidance outputs publically available? | No |

| Incentives and regulatory support for renewable energy | Score | 63 |
|---|--|----|
| Is there at least one scheme to support renewable energy per unit of electricity generated? (e.g., feed-in tariff, competitive bidding/auction, mandates, generation premiums, production tax credits)? | Yes | |
| Feed-in tariff | Yes | |
| Feed-in tariff - Solar | Yes | |
| Feed-in tariff - Wind | Yes | |
| Feed-in tariff - Hydro | Yes | |
| Feed-in tariff - Biomass | Yes | |
| Feed-in tariff - Geothermal | No | |
| Government body in charge | Energy Policy and Planning Office and Energy Regulatory Commission | |
| Projects guaranteed off-take | No | |

Regulatory Indicators for Sustainable Energy (RISE)

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|--|---|
| Solar Feed-in-tariff Price (\$ cents/kWh) | 16 |
| Solar Feed-in-tariff Max. capacity (single) | ? 90 MW |
| Solar Feed-in-tariff Max. capacity (total) | Not specified yet |
| Solar Feed-in-tariff Closing date | To be announced in the next round of power purchase |
| Wind Feed-in-tariff Price (\$ cents/kWh) | 17 |
| Wind Feed-in-tariff Max. capacity (single) | 10 MW |
| Wind Feed-in-tariff Max. capacity (total) | Not specified yet |
| Wind Feed-in-tariff Closing date | To be announced in the next round of power purchase |
| Hydro Feed-in-tariff Price (\$ cents/kWh) | 14 |
| Hydro Feed-in-tariff Max. capacity (single) | ? 200 kW |
| Hydro Feed-in-tariff Max. capacity (total) | Not specified yet |
| Hydro Feed-in-tariff Closing date | To be announced in the next round of power purchase |
| Biomass Feed-in-tariff Price (\$ cents/kWh) | 15 |
| Biomass Feed-in-tariff Max. capacity (single) | 10 MW |
| Biomass Feed-in-tariff Max. capacity (total) | 280.43 MW including biogas |
| Biomass Feed-in-tariff Closing date | 43070 |
| Geothermal Feed-in-tariff Price (\$ cents/kWh) | n/a |

Regulatory Indicators for Sustainable Energy (RISE)

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|---|-----|
| Geothermal Feed-in-tariff Max. capacity (single) | n/a |
| Geothermal Feed-in-tariff Max. capacity (total) | |
| Geothermal Feed-in-tariff Closing date | |
| Competitive bidding | No |
| Auction 1 - Year | |
| Auction 1 - Technology | |
| Auction 1 - Project-specific tender and size (MW) | |
| Auction 1 - Auction for total and size (MW) | |
| Auction 1 - Standard PPA and Term | |
| Auction 1 - Price ceiling | No |
| Auction 1 - Winning bid (\$ cents/kWh) | |
| Auction 1 - Government body in charge | |
| Auction 2 - Year | |
| Auction 2 - Technology | |
| Auction 2 - Project-specific tender and size (MW) | |
| Auction 2 - Auction for total and size (MW) | |
| Auction 2 - Standard PPA and Term | |
| Auction 2 - Price ceiling | No |
| Auction 2 - Winning bid (\$ cents/kWh) | |
| Auction 2 - Government body in charge | |

Regulatory Indicators for Sustainable Energy (RISE)

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| Winning bid guaranteed off-take | No |
| Mandates | No |
| Generation premium | No |
| Production tax credit | No |
| Does the government offer other direct fiscal incentives for renewable energy (e.g. capital subsidies, grants or rebates, investment tax credits, tax reductions?) | Yes |
| Investment tax credit | No |
| Accelerated depreciation | No |
| Reduction in import taxes | Yes |
| Reduction in sales tax or other taxes | Yes |
| Does the country provide prioritized access to the grid for RE? | Yes |
| Do RE projects receive priority in dispatch? | No |
| Are there provisions to compensate seller if offtake infrastructure is not built in time? | No |
| Are there mechanisms to compensate RE projects for lost generation due to certain curtailments after project commissioning? | No |

| Attributes of financial and regulatory incentives | Score | 100 |
|--|-------|-----|
| Is the market entry mechanism for private RE projects defined? (e.g. 1st come 1st served; tenders) | Yes | |
| Details | | 0 |

Regulatory Indicators for Sustainable Energy (RISE)

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|---|-----|
| Are projects subject to development timelines or milestones? | Yes |
| Are tariffs indexed (in part or in whole) to an international currency or to inflation? | Yes |
| If there is a guaranteed tariff, is there a mechanism to adjust the level of the tariff for new entrants (e.g., declination)? | Yes |
| If there is a guaranteed tariff, is there a mechanism to differentiate tariffs based on the size of the generation plant? | Yes |
| If there is competitive bidding/auctions, are there provisions to ensure full and timely project completion (e.g., bid-bonds, project milestones, eligibility requirements) | N/A |
| If there is a renewable energy mandate, can it be met with tradable certificates (e.g., RECs, ROCs, TECs)? | N/A |
| Is the price subsidy/benefit implied by a renewable energy incentive program passed through in full or in part to the final electricity consumer? | Yes |

| Network connection and pricing | Score | 58 |
|--|--------------|-----------|
| Are there rules defining the allocation of connection costs? | Yes | |
| What is the type of the connection cost allocation policy (i.e. shallow/deep)? | Deep | |
| Are there rules that allow electricity customers to purchase power directly from a third party (i.e. an entity other than the designated utility in a service area)? | No | |
| Do the rules define the size and allocation of costs for transmission and distribution wheeling charges? (e.g., wheeling charges, locational pricing?) | N/A | |
| Do the rules consider customer type/size in determining eligibility for purchasing electricity from a third party? | N/A | |

Regulatory Indicators for Sustainable Energy (RISE)

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|--|-----|
| connection cost document | 0 |
| Does the country have a grid code that includes measures or standards addressing variable renewable energy? | Yes |
| Is there more than one balancing area in the country? | No |
| Are there rules for exchanging power between balancing areas that penalize variable renewable energy (e.g. through imbalance penalties)? | N/A |
| Are there provisions in the power exchange rules that allow for plant forecasting? | N/A |

| Counterparty risk | Score | 64 |
|--|--------------|-----------|
| Does the government offer or allow backing of utility payments (e.g. through a letter of credit, escrow account, payment guarantee, or other)? | No | |
| Information disclosure | 33 | |
| Are the financial statements of the largest utility publicly available? | 0 | |
| Are the financial statements of the largest generation company publicly available? | Yes | |
| Are the financial statements of the largest transmission company publicly available? | Yes | |
| Are the financial statements of the largest distribution company publicly available? | Yes | |
| Are the financial statements of the largest retail electricity sales company publicly available? | Yes | |
| Are the following metrics published in a primary official document (by the utility, regulator or ministry and/or government)? | 0 | |

Regulatory Indicators for Sustainable Energy (RISE)

| | |
|--|-----|
| Is the transmission loss rate published in a primary official document (by the utility, regulator or ministry and/or government)? | Yes |
| Is the distribution loss rate published in a primary official document (by the utility, regulator or ministry and/or government)? | Yes |
| Is the bill collection rate published in a primary official document (by the utility, regulator or ministry and/or government)? | Yes |
| Is the amount of electricity available for sale to end-users published in a primary official document (by the utility, regulator or ministry and/or government)? | Yes |
| Information Auditing | 33 |
| Financial statements independently audited? | 0 |
| Are the financial statements of the largest generation company audited? | Yes |
| Are the financial statements of the largest transmission company audited? | Yes |
| Are the financial statements of the largest distribution company audited? | Yes |
| Are the financial statements of the largest retail electricity sales company audited? | Yes |
| Monitoring Reliability | 0 |
| Is the utility operating an incidence/outage recording system (or SCADA/EMS with such functionality)? | Yes |
| Is the utility measuring the SAIDI and SAIFI or any other measurements for service reliability? | Yes |
| Are the data reported to the regulatory body? | Yes |

Regulatory Indicators for Sustainable Energy (RISE)

| | |
|---|------------------------------------|
| Are the data available to the public? | Yes |
| Name of the selected utility | Metropolitan Electricity Authority |
| data - 17.1. Current ratio (working capital ratio) | 2 |
| data - 17.2 Debt Service Coverage Ratio | 2 |
| data - 17.3 Days payable outstanding | 30 |
| data - 17.4 EBITDA margin | 0 |
| Current ratio (working capital ratio) of selected utility | 25 |
| Debt Service Coverage Ratio of selected utility | 25 |
| Days payable outstanding of selected utility | 25 |
| EBITDA margin of selected utility | 16 |

| Carbon pricing and monitoring | Score | 0 |
|--|--------------|----------|
| Is there a carbon pricing mechanism in place? | | No |
| For any carbon pricing mechanism (e.g. carbon tax, emission trading system), what is the portion of national GHG emissions covered)? | | 0% |
| Is there a monitoring, reporting and verification system for greenhouse gas emissions in place? | | No |