

CHAPTER ONE

INTRODUCTION



1. INTRODUCTION

RISE is built on the premise that policies matter along with good institutions and enforcement. RISE is based on a wealth of empirical evidence which shows that policies and regulations matter when countries are seeking to attract investment and establish a sustainable energy agenda. Therefore, it is relevant to assess the existence of policy and regulation to understand the investment environment for sustainable energy. However, there may be many factors that influence investment decisions, from the existence of good practices, to quality and content of the policies, and their actual enforcement.

RISE provides national policymakers with a tool to benchmark their energy sector framework against regional and global peers' policy and regulations, as well as track their own progress over time. RISE is a systematic platform for comparison, that highlights global and regional trends across sustainable energy policies, and provides detailed information on good practices and successful approaches in comparable countries. By focusing on actions within the ambit of policymakers, RISE can also contribute to domestic policy debates, while providing a global reference point on good practices.

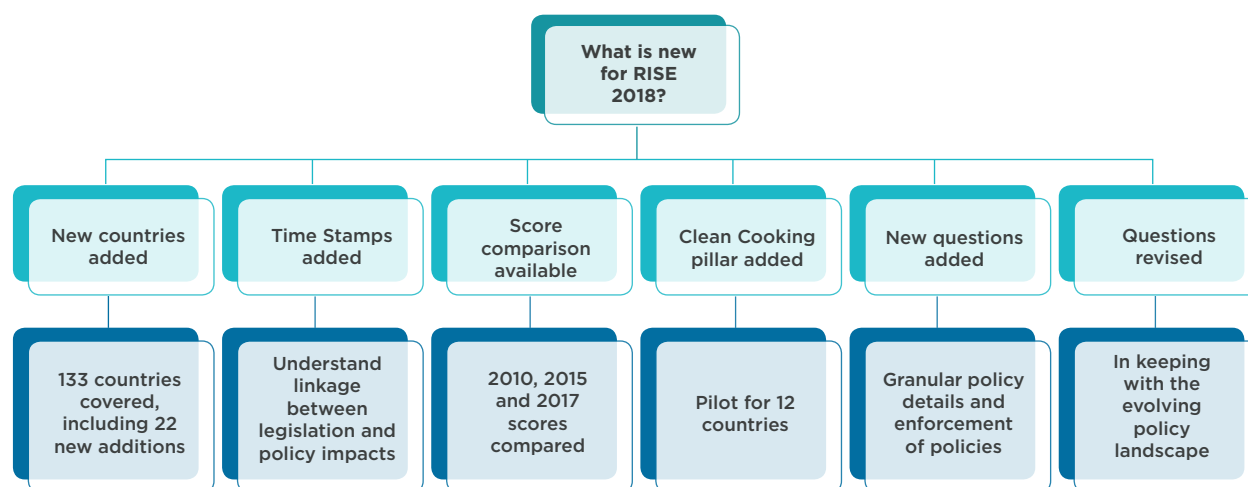
RISE informs private sector actions. RISE is a valuable source of information to private investors and developers of sustainable energy projects, products, and services. It provides investors with a starting point for country-level analysis, as the data presented in the report is supported by documents from government ministries and/or local consultants, and is validated by World Bank country experts. Given this context, RISE can help complement the toolkit that investors and developers use when assessing the investment climate for sustainable energy in a given country.

RISE 2018 has new indicators and additional country profiles. In this 2018 edition of RISE, several important innovations have been added to improve the relevance of the indicators and to align with shifting global trends in sustainable energy (*Figure 1.1*).

RISE 2018 has the following new features:

1. **Considerable increase in the number of countries**, from 111 in RISE 2016 to 133 in RISE 2018. The number of countries has been expanded in RISE 2018 to cover 97 percent of the global population. Further expansion will be considered for the future editions of RISE to include all European countries and small island states.
2. **Refinement of indicators and sub-indicators**, to incorporate key innovations relating to assessment of implementation effectiveness and regulatory enforcement process; uptake of off-grid electricity access technologies and how this impacts rural electrification strategies; renewable energy and energy efficiency solutions in the transport, heating and cooling sectors; the assessment of implementation effectiveness and the regulatory enforcement process, and gender considerations in policies (*Figure 1.2*).
3. **Convenient addition of a time stamp on policies that enable trend analysis for the period 2010-2017.** RISE allows users to discern the historical adoption of policies covered in this edition dating back to 2010 to track progress in policy adoption over time. This “time stamp” element of RISE provides a valuable means for policymakers, researchers, and private sector actors to monitor progress in specific countries and analyze potential causal or corollary relationships between reforms and results.¹

FIGURE 1.1 INNOVATIONS IN RISE 2018

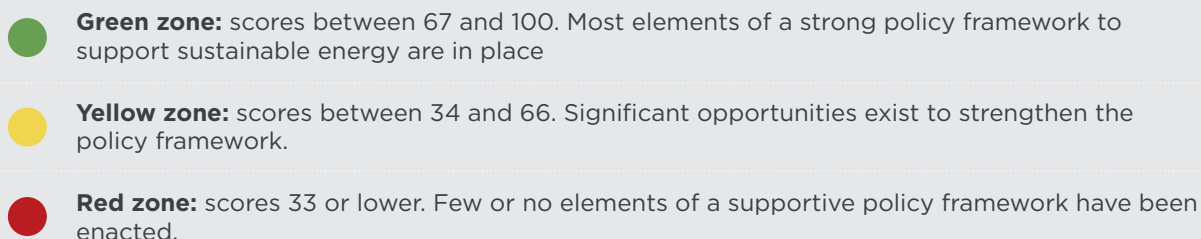


Source: World Bank RISE 2018

FIGURE 1.2 RISE INDICATORS PER PILLAR

Policies and Regulations				
Electricity Access	- Existence and implementation of electrification plan - Scope of electrification plan	- Grid electrification - Mini grids - Standalone systems	- Affordability of electricity - Utility transparency and monitoring	Utility creditworthiness
Clean cooking	Planning	Scope of planning	Standards and labelling	Incentives and attributes
Renewable Energy	- Legal framework for renewable energy - Incentives & regulatory support for renewable energy	- Network connection and use - Carbon pricing and monitoring	- Planning for renewable energy expansion - Attributes of financial and regulatory incentives	Counterparty risk
Energy Efficiency	- National energy efficiency planning - Types of electricity rate structures - Mandates & incentives: utilities - Energy labeling system	- Energy efficiency entities - Mandates & incentives: large consumers - Financing mechanisms for energy efficiency	- Building energy codes - Information provided to electricity consumers - Mandates & incentives: public entities	- Minimum energy performance standards - Carbon pricing and monitoring - Transport energy efficiency

Source: World Bank RISE 2018

FIGURE 1.3 TRAFFIC LIGHT SYSTEM USED TO ASSESS THE RISE POLICY ENVIRONMENT

4. **Innovative pilot of indicators for clean cooking solutions**, covering 12 countries that account for over 55 percent of the global clean cooking access deficit.

The scoring methodology for RISE 2018 has not changed. All indicators are scored between 0 and 100 and have equal weights to reach a total score for each pillar. Pillar and indicator scores are grouped into three categories based on a “traffic light” system (*Figure 1.3*).

RISE pillars are related but remain independent. The pillar indicators were created by different subject matter experts, and while an attempt was made to make all three pillars equally rigorous, there are nuanced differences. Therefore, the results across pillars are not directly comparable. Moreover, as markets mature, policies need to adjust, and this is reflected in changes to the questions asked in every new edition of RISE.

The sustainable energy market is dynamic, and so is RISE. As energy technologies develop and mature, policymakers are constantly tasked with developing new policies to support their deployment, drive investment, and achieve both national and international climate goals. In this regard, RISE must adapt its indicators and focus with each new edition to stay relevant, while recognizing that it can only ever show a snapshot in time.

Feedback from users is important. Since the release of the first RISE report, feedback gathered from various RISE users—from the public sector, private sector, civil society, and academia—has been instrumental in ensuring

ongoing improvement of indicators to maintain relevance and consistency with best practices. RISE continues to engage with its users to find new approaches and methods to improve its accuracy and relevance to interested stakeholders. The next edition of RISE will aim to include a section on country readiness to embrace disruptive energy technology, such as battery storage, to enhance human capital, and to include additional indicators on policy adoption.

Measuring the enforcement of policies remains challenging. The RISE library is intended to provide an objective overview of the legislation, policies, and strategies that have been developed and made available by governments. RISE 2018 has added several layers of questions to try and capture the enforceability of existing policy regulations across the three pillars. However, existence of regulations do not necessarily reflect actual enforcement. Accordingly, this remains an ongoing area of research and refinement within RISE.

The RISE score is not an endorsement for investment. RISE is intended to measure how far a country is from offering an attractive policy environment, and not how much investment is likely to be deployed within the country under its current policy environment. Investment in sustainable energy is heavily influenced by factors well beyond what can be governed by energy sector policies, namely the establishment of strong institutions, access to credible data, appropriate financing mechanisms and a robust private sector. RISE scores should not be interpreted as a comprehensive evaluation of whether a country is attractive for

investment. Moreover, RISE scores should not be viewed as a predictor or indicator of SDG7 results. Nevertheless, RISE helps explain trends in sustainable energy investment and outcomes to some extent. RISE scores can be analyzed at a more granular level to fully understand its components, which can then be used to inform decisions.

Richness of RISE data allows for different analytical frameworks. The RISE report employs a specific methodology to calculate scores of a country's policies framework. By employing different weighting, grouping of questions, or question types and time frames, contrasting conclusions can be derived. It is also worth acknowledging that the degree of complexity and technical sophistication needed to adopt certain policies in one pillar of RISE may not be comparable to that for other pillars. While RISE has worked with external advisory groups, comprising well-respected organizations across the four core pillars, to develop the analytical approach presented in this report, there are other approaches possible. In

this regard, the availability of the RISE data library online provides a resource for researchers to experiment with other methodological approaches.

The RISE website has an extraordinary wealth of data on sustainable energy. While the report highlights overarching global, regional and pillar-specific trends, the RISE website contains all the raw data disaggregated at the question level. It allows users to search for specific information and download data for their own analysis. The website also allows users to view and download overall data for each pillar, and country profiles with numerical scores by pillars. The most useful feature is the comprehensive library with all the supporting documents from government ministries and/or local consultants that has been validated by World Bank country experts. The details of the indicators are made available in indicator pages, where users can look up the description of each indicator, the list of questions, and the scoring distribution.

ENDNOTES

¹ Note that the normative RISE 2015 score in this report based on time stamps is different from the RISE 2015 score in the previous edition of RISE. Since the publication of the previous edition of RISE in 2016, the RISE methodology has evolved to include new questions, resulting in revised scores for RISE 2015.

CHAPTER TWO

OVERVIEW

THE GLOBAL LANDSCAPE SINCE 2010

OVERVIEW

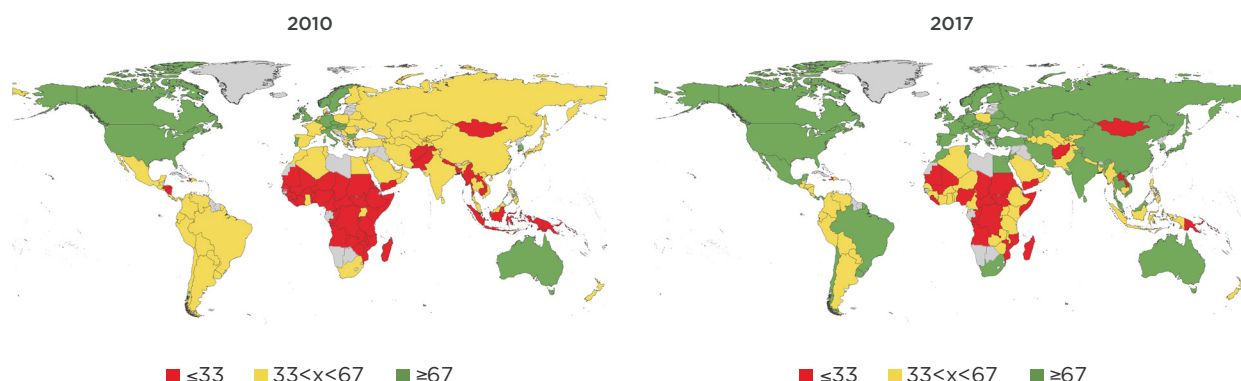


2. OVERVIEW: THE GLOBAL LANDSCAPE SINCE 2010

KEY MESSAGES:

- Since 2010, the number of countries adopting advanced policy frameworks in support of sustainable energy has more than tripled (from 17 to 59). Despite variations in performance by region and income group, there are strong performers in every region and in every income group.
- Among the countries that have made the greatest progress on sustainable energy, there have also been significant improvements in the enabling environment, indicating that policy matters.
- Many of the world's largest countries have been proactive in improving their regulatory environment. This means that about two thirds of global energy consumption takes place in countries covered by advanced policy frameworks for energy efficiency, while almost half the global population without access to electricity lives in countries with advanced policy frameworks for energy access.
- Nevertheless, as of 2017, the world as a whole is still little more than half way towards the adoption of supportive policies for sustainable energy. At the current pace of improvement, the average global RISE score would not reach the green zone (or advanced stage) until 2025, jeopardizing the achievement of the SDG 7 targets by 2030 as well as the Paris Climate Goals.
- While the world as a whole has only been able to improve its RISE score by two points per year, the most proactive countries have increased their scores by more than four points per year.
- Concerns about climate change have lent considerable momentum to the adoption of clean energy policies, with an evident surge in the uptake of targets for renewable energy and energy efficiency in the run-up to the 2015 Paris Climate Accord.
- Yet, outside of the OECD, policies to support renewable energy and energy efficiency primarily target the electricity sector, overlooking the fact that 80 percent of energy consumption is in the heating and transportation sectors.
- In the cooking sector, there is some evidence that policymakers are beginning to take more notice of the clean cooking agenda, but significant room for improvement remains, specifically with regards to institutional capacity, scope of planning, and financial incentives.
- Policies alone cannot deliver results unless they are complemented by institutional capacity for effective enforcement. While efforts on enforcement have been improving, they continue to lag behind compared to adoption of regulations "on paper".
- The financial health of power utilities is also a key enabler of investment in sustainable energy. Yet only half of utility companies were deemed creditworthy in 2016, and average financial performance has even deteriorated relative to 2012.

FIGURE 2.1 GLOBAL OVERVIEW OF RISE SCORES, 2010 VS. 2017



Source: World Bank RISE 2018

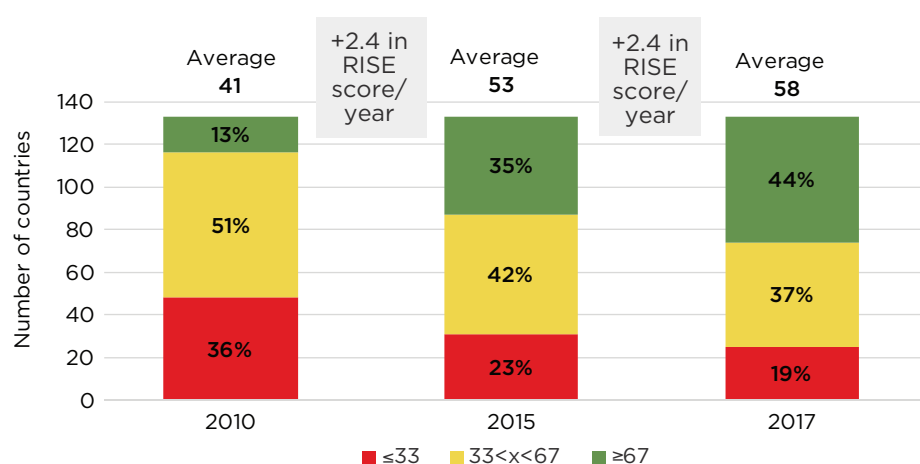
GLOBAL RISE SCORE: IMPROVEMENT IN SUSTAINABLE ENERGY POLICY IN 2010-2017

Since 2010, there has been a substantial increase in the number of countries adopting advanced policy frameworks in support of sustainable energy. As recently as 2010, just a handful of 17 countries – almost all of them OECD members – had developed advanced policy frameworks in support of sustainable energy (shaded in green in *Figure 2.1*). By 2017, 59 countries had developed advanced

policy frameworks, including many emerging and developing countries spread across all continents (*shaded green in Figure 2.1*). Prominent examples include Brazil, China, Mexico, Morocco, Russia and South Africa.

The pace of improvement has been consistent since 2010. The global average score on the RISE index has improved by over two points each year between 2010 and 2017. During this period, the global average score increased from 41 to 58, indicating an intermediate (yellow) stage of policy development overall (*Figure 2.2*). Nevertheless, individual

FIGURE 2.2 OVERALL PROGRESS ON GLOBAL SUSTAINABLE ENERGY REGULATION, 2010-2017



NOTE: The chart shows RISE scores for all 133 countries, including non-access deficit countries that are automatically assigned a score of 100 for Electricity Access.
Source: World Bank RISE 2018

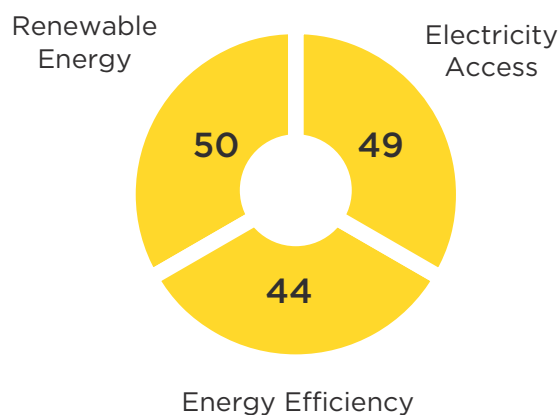
countries are at very diverse stages. The share of countries with advanced (green) policy frameworks rose from 13 to 44 percent, while the share of countries with undeveloped (red) policy frameworks fell from 36 to 19 percent (*Figure 2.2*). Nonetheless, this means that one in five countries – mainly located in Sub-Saharan Africa – remain at the early stages of building a sound policy environment.

If the world continues to improve at the pace achieved between 2010 and 2017, the average global RISE score would not reach the green zone until 2025. This rate of progress is worrisome given that major global commitments on sustainable energy have been made for 2030 under SDG7 and the Paris Climate Accords. Policies are often a prerequisite for other actions to follow; if the full suite of policy measures is not in place until 2025, this will leave little time to make progress toward global targets by 2030. Furthermore, given the rapid rate of technological progress in sustainable energy, the policy environment cannot remain static. It is highly likely that additional policies beyond those considered here will need to be put in place to cover emerging areas such as battery storage, digitalization of networks, and other innovations. This means that the challenge for policy makers will only increase over time.

Across all dimensions of sustainable energy, average global scores suggest there is considerable scope to improve policy and regulatory framework. The overall RISE score reflects performance on three dimensions of sustainable energy: energy access; renewable energy; and energy efficiency. As of 2017, the global average score did not exceed 50 in any of these areas, indicating an intermediate (yellow) level of performance in all cases (*Figure 2.3*)².

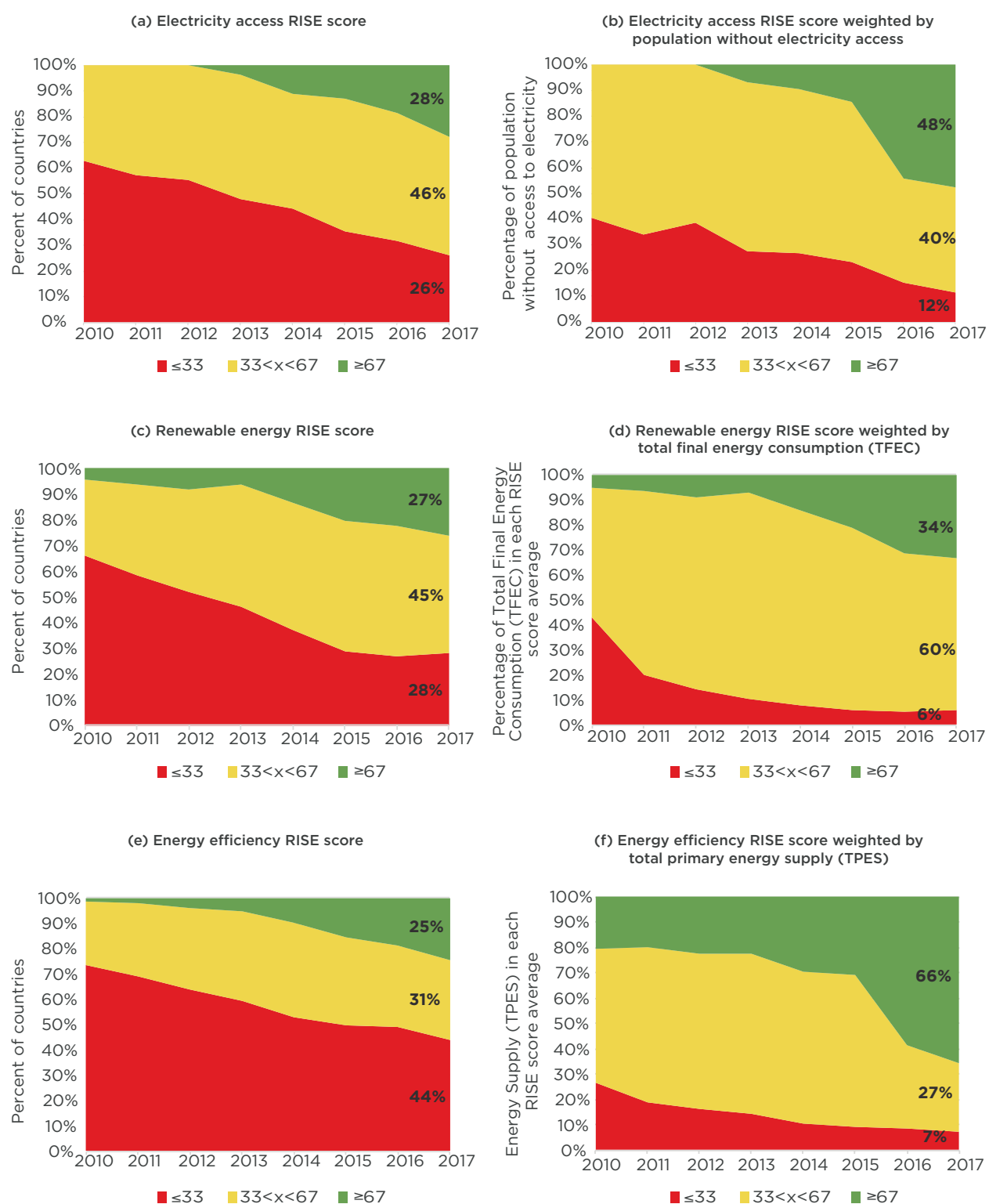
High impact countries have been developing more comprehensive policies and regulations. When it comes to electrification, only 28 percent of access-deficit countries have achieved advanced (green) policy frameworks, but overall these countries represent 48 percent of the unserved population globally (compare *Figures 2.4(a,b)*). This is due in large measure to the adoption of strong policies to support electrification in India, which with 205 million people still lacking access to electricity in 2016, is by far the largest access-deficit country. Turning to renewable energy, 27 percent of countries have advanced (green) policy frameworks for renewable energy, representing 34 percent of the total final energy consumption (TFEC) (compare *Figures 2.4(c,d)*). Among those are countries

FIGURE 2.3 RISE AVERAGE SCORES BY PILLAR, 2017



Note: RISE Electricity Access pillar score on this chart doesn't include countries that have achieved universal access. The Electricity Access score of 49 on this chart is calculated for the countries with access deficit only, resulting in the global RISE score of 48. The overall unweighted score for Electricity Access for all 133 countries, including non-access deficit countries that are automatically assigned a score of 100 is 80, resulting in the global RISE score of 58, as shown on Figure 2.2.
Source: World Bank RISE 2018

FIGURE 2.4 DISTRIBUTION OF RISE SCORES BY PILLAR BETWEEN 2010 AND 2017

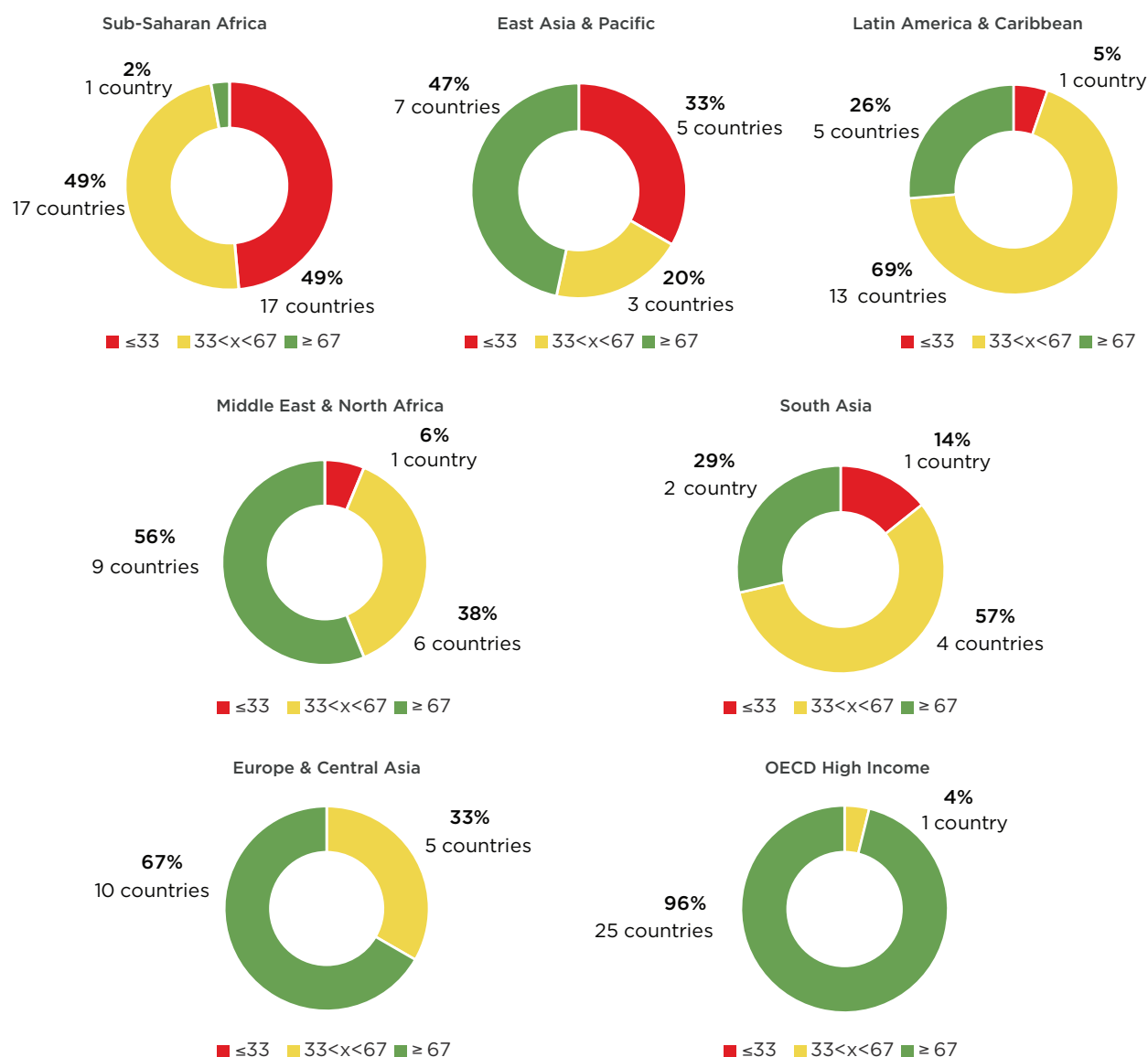


Source: World Bank RISE 2018

with higher TFECE, such as Germany, United Kingdom and Brazil, as well as those with significantly lower TFECE, such as Switzerland, Greece and Denmark. Regarding energy efficiency, while only 25 percent of countries have advanced (green) policy frameworks, they represent 66 percent of total primary energy supply (TPES) (compare *Figures 2.4(e,f)*). This reflects the fact that the world's two largest energy users – China and the United States – score in the green zone for energy efficiency.

While there is a wide variation in performance across geographic regions, all country groupings have made consistent progress. At the regional level, OECD countries have led the effort in building up robust policy and regulation frameworks for sustainable energy, and almost all of them have achieved advanced (green) policy frameworks (*Figure 2.5*). At the other extreme, in Sub-Saharan Africa around half of all countries have undeveloped (red) policy frameworks (*Figure 2.5*). Nevertheless, all regions have shown sustained performance

FIGURE 2.5 DISTRIBUTION OF RISE SCORES BY REGION, 2017



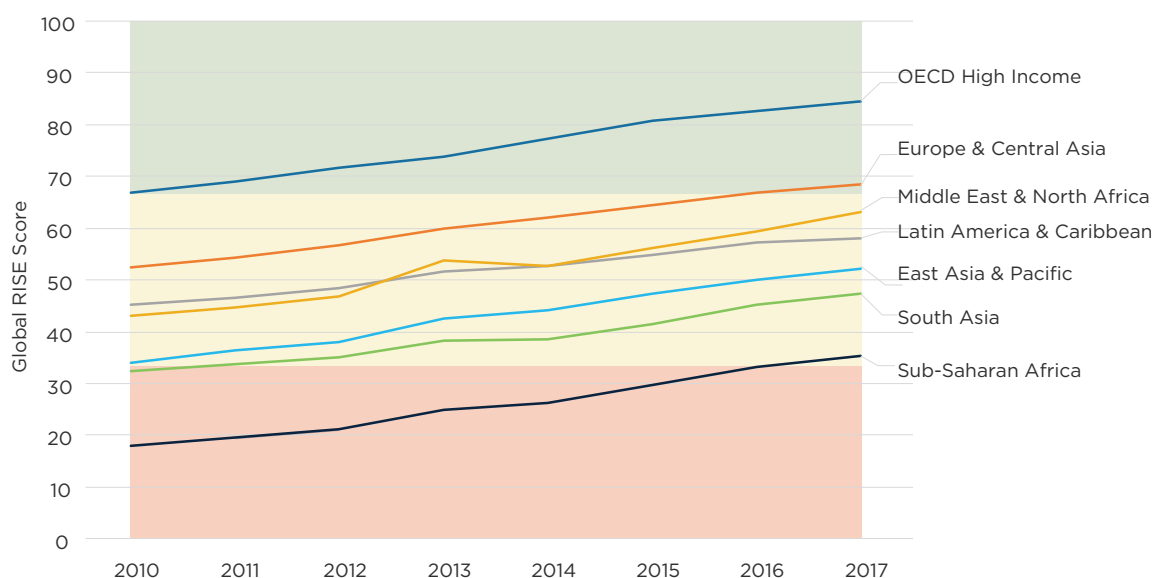
Source: World Bank, RISE 2018

improvements over time (*Figure 2.6*). It is striking that the Middle East and North Africa region, which had been performing about the same as Latin America & Caribbean in 2010, has subsequently accelerated adoption of policy measures and is approaching the level of policy frameworks found in Europe & Central Asia (*Figure 2.6*). Similarly, while the East Asia

& Pacific region performed no better than South Asia in 2010, its adoption of sustainable energy policies has subsequently accelerated, moving it closer to the performance of the Latin America & Caribbean region (*Figure 2.6*).

While higher RISE scores are broadly associated with higher income levels, there are sev-

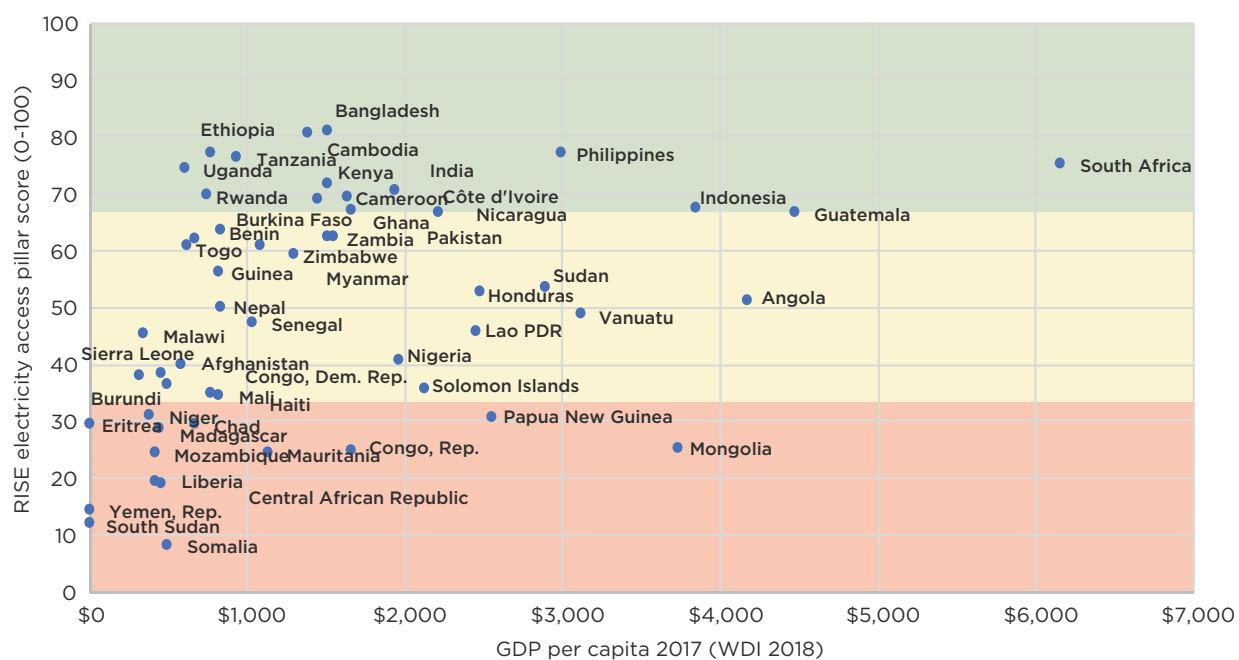
FIGURE 2.6 EVOLUTION OF RISE SCORES BY REGION BETWEEN 2010 - 2017



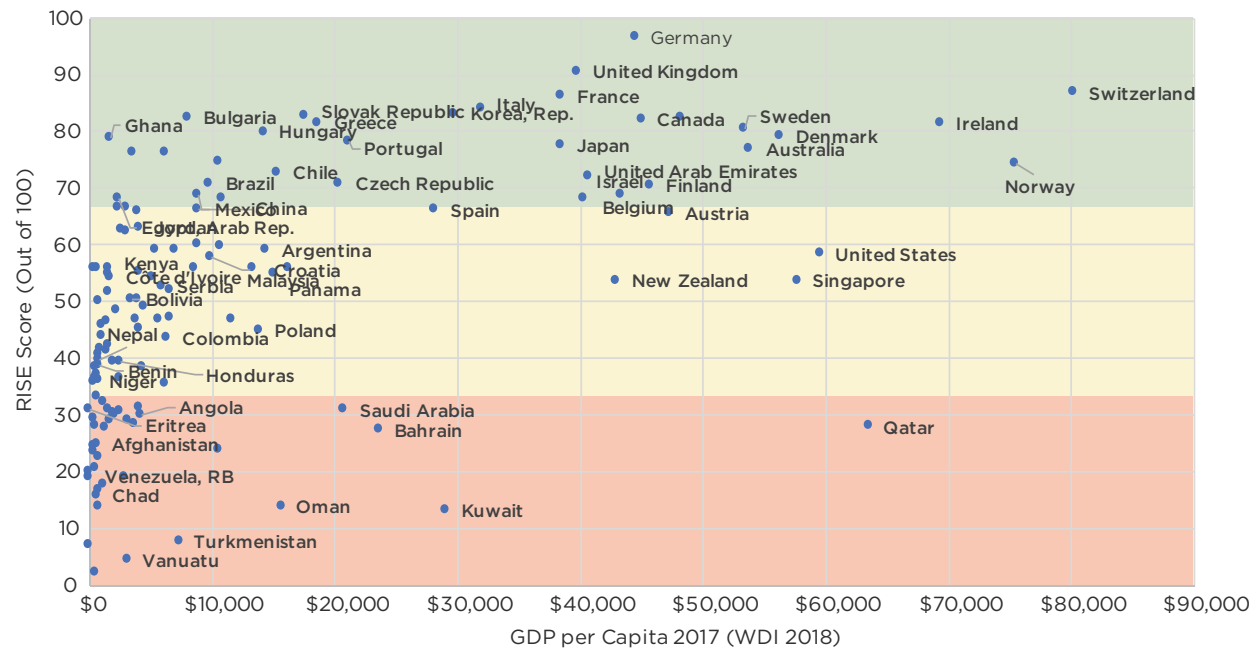
Source: World Bank, RISE 2018

eral examples of lower income countries that are doing relatively well with their policy environments. Whether one considers electricity access (*Figure 2.7*), renewable energy (*Figure 2.8*) or energy efficiency (*Figure 2.9*), there is a concentration of lower income countries with undeveloped (red) policy frameworks, and higher income countries with more advanced (green) policy frameworks. Nevertheless, this does not tell the whole story. In the case of energy access, countries such as Ethiopia, Rwanda, Tanzania and Uganda all with GDP per capita below USD \$1,000 achieve a green rating for their policy environment (*Figure 2.7*).

For renewable energy (*Figure 2.8*) and energy efficiency (*Figure 2.9*), there are almost no countries above USD \$20,000 per capita GDP scoring in the red zone (with the exception of most of Gulf States), and comparatively few falling in the yellow zone (such as New Zealand). At the other end of the spectrum, there is a wide variation in the maturity of the policy framework for clean energy across the lower income countries. Many developing countries, such as Côte d'Ivoire, Kenya and Nepal are in the yellow zone for renewable energy, while Ghana is in the green zone (*Figure 2.8*). Similarly, for energy efficiency, many developing

FIGURE 2.7 RISE ELECTRICITY ACCESS SCORE AGAINST GDP PER CAPITA, 2017

Source: World Bank, RISE 2018; World Development Indicators, 2018

FIGURE 2.8 RISE RENEWABLE ENERGY SCORE AGAINST GDP PER CAPITA, 2017

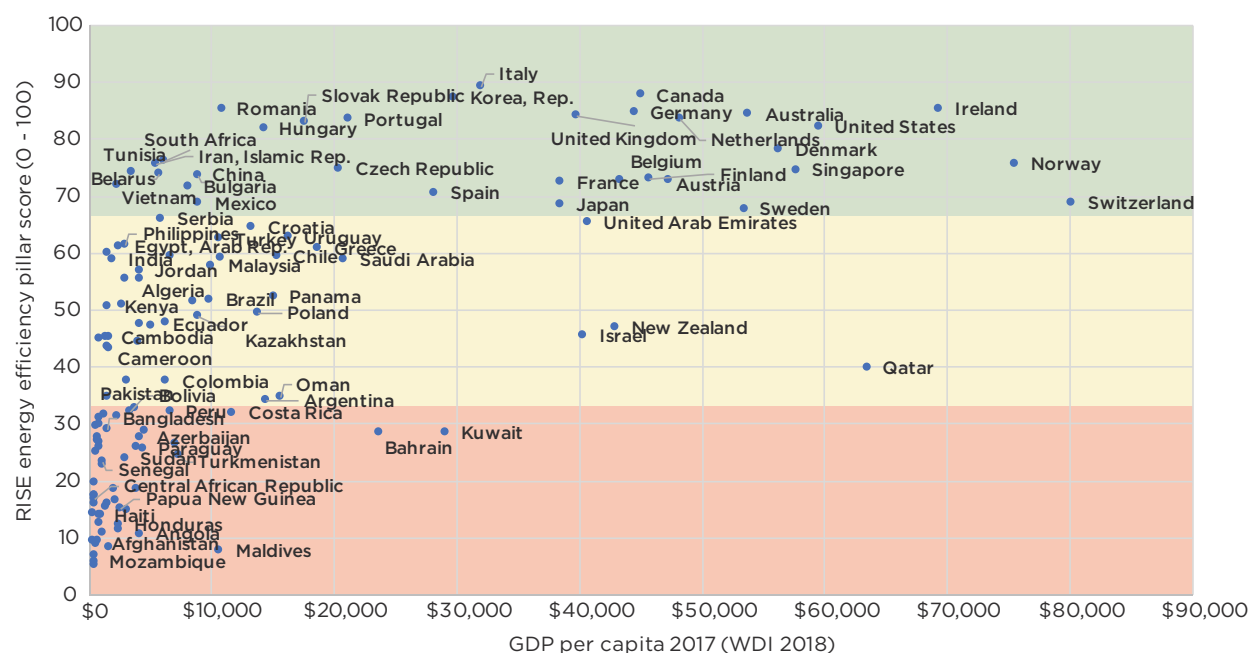
Source: World Bank, RISE 2018; World Development Indicators, 2018

countries such as Cambodia, Cameroon, Kenya, and India are in the yellow zone, while Vietnam falls in the green zone (Figure 2.9).

Every region has at least one RISE top performer in the green zone, while each region shows strengths in different areas (Table 2.1). A look at the top three RISE performers serves to underscore that there are advanced countries in every region. OECD countries and those located in Europe & Central Asia tend to score well both on renewable energy and energy efficiency, whereas other regions are

more likely to emphasize one aspect over the other. In the East Asia & Pacific and Middle East & North Africa regions, the top performers show strong development of energy efficiency policies. For example, Tunisia performs particularly well in energy efficiency planning and incentives and mandates for the public and industrial sectors, and Singapore performs exceptionally well in energy labeling schemes and financing mechanisms for energy efficiency. Turning to Sub-Saharan Africa, South Africa stands out as being relatively advanced on all

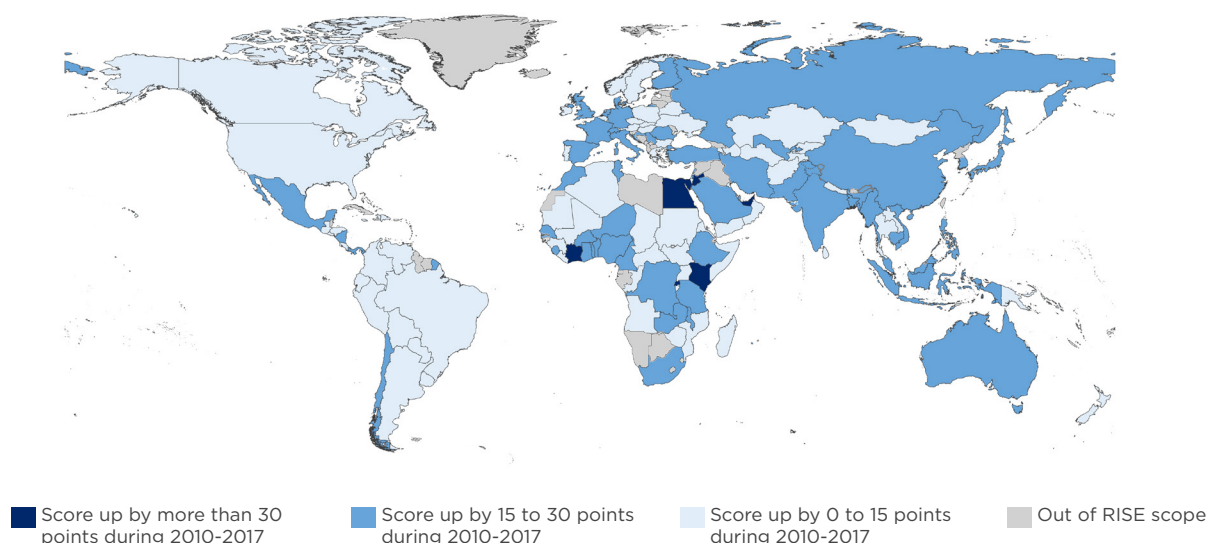
FIGURE 2.9 RISE ENERGY EFFICIENCY SCORE AGAINST GDP PER CAPITA, 2017



Source: World Bank, RISE 2018; World Development Indicators, 2018

TABLE 2.1 TOP 3 PERFORMERS ON RISE IN EACH REGION, 2017

East Asia & Pacific	Europe & Central Asia	Latin America & Caribbean	Middle East & North Africa
Singapore ●	Bulgaria ●	Mexico ●	Iran ●
China ●	Romania ●	Brazil ●	Tunisia ●
Vietnam ●	Turkey ●	Uruguay ●	United Arab Emirates ●
OECD High Income	South Asia	Sub-Saharan Africa	
Germany ●	Sri Lanka ●	South Africa ●	
United Kingdom ●	India ●	Ghana ●	
Italy ●	Bangladesh ●	Kenya ●	

FIGURE 2.10 EVOLUTION OF RISE GLOBAL SCORES BETWEEN 2010 AND 2017

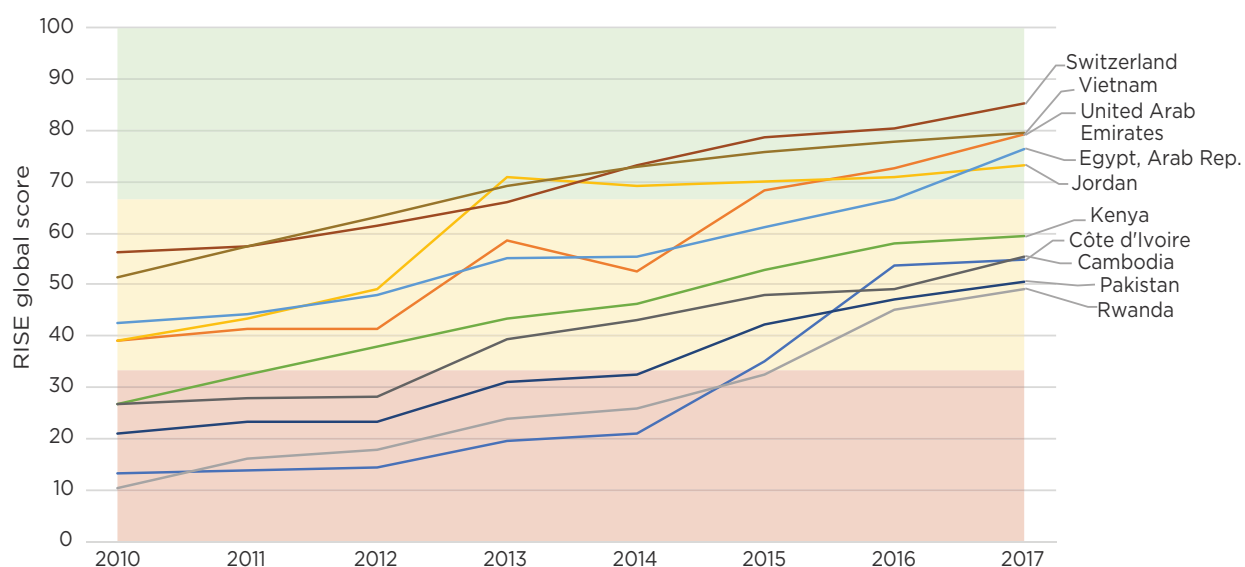
Source: World Bank RISE 2018

three aspects of sustainable energy. By contrast, countries such as Bangladesh, Ghana, India, and Kenya have concentrated their efforts on policy frameworks for electricity access, even as they begin to catch-up on renewable energy and energy efficiency.

While almost all countries increased their RISE score between 2010 and 2017, some moved much faster than others (*Figure 2.11*). A hand-

ful of fast moving countries were able to increase their RISE scores by more than four points per year on average from 2010 to 2017.

Of the world's top ten improvers in RISE since 2010, half are electricity access-deficit countries, with three located in Sub-Saharan Africa. The ten countries with the largest improvements in RISE scores since 2010 divide into two groups (*Figure 2.11*). A first group

FIGURE 2.11 TOP TEN COUNTRIES WITH FASTEST-IMPROVING RISE SCORES BETWEEN 2010 AND 2017

Source: World Bank RISE 2018

BOX 2.1 TOP IMPROVER

Overall, since 2010, Côte d'Ivoire has made the fastest progress on sustainable energy policies according to the RISE index. In electricity access, the country achieved an important milestone in approving its Rural Electrification Plan, followed by the development of a framework for grid connection and mini grids in 2016. In renewable energy, 2013 marked an inflection point for the country as a legal framework for renewable energy was introduced and a renewable energy auction for small hydro and solar energy projects was held. By 2017 it had considerably improved its basic regulatory framework and the attributes of financial and regulatory incentives. In energy efficiency, the country's National Action Plan was developed with the assistance of the ECOWAS Center for Renewable Energy and Energy Efficiency (ECREEE) and was adopted in 2016. The effective and full implementation of the plan will save and/or release more than 50 megawatts of power each year over the period 2016–2030.

(comprising Egypt, Jordan, Switzerland, United Arab Emirates, and Vietnam) are middle-to high-income countries that began in the yellow zone in 2010 and have subsequently all progressed to green. The preponderance of countries from the Middle East and North Africa in this group reflects the general rapid acceleration of progress across this region. A second group (comprising Cambodia, Côte d'Ivoire, Kenya, Pakistan, and Rwanda) are remarkable for all being relatively low-income, access-deficit countries that have started developing policy frameworks almost from scratch (red) and had reached an intermediate stage (yellow) by 2017.

POLICY MATTERS: STRONGER PERFORMERS ON SUSTAINABLE ENERGY ALSO SHOW IMPROVING RISE SCORES

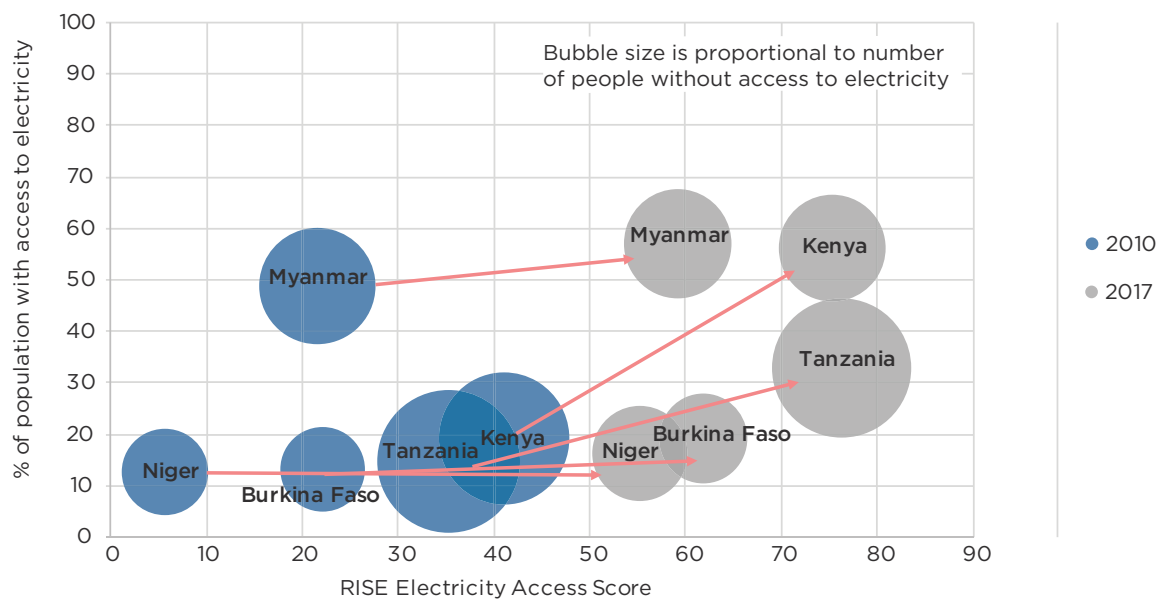
Access-deficit countries that have increased their electricity access rates the most since 2010 have shown a noticeable improvement in electricity access policies. These countries have increased their adoption of electricity access policies, which in turn has helped shift the needle at the global level.³ The five countries that saw the highest increases in their access rates since 2010 – Burkina Faso, Kenya, Myanmar, Niger, Tanzania – all made progress in their policy and regulatory frameworks for electricity access raising their

scores to the range of 60–80 by 2017 (*Figure 2.12*). Kenya, in particular, stands out for its accelerated progress in electrification underpinned by rapid adoption of supporting policy measures, following the paradigm shift contained in the country's National Electrification Program.

The largest energy consuming countries have increased their share of modern renewable energy in their total final energy consumption (TFEC), and have also significantly improved their renewable energy policies. A majority of the 20 largest energy-consuming (high-impact) countries improved their RISE renewable energy scores during the 2010–2017 period. The five countries that achieved the largest increase in their share of modern renewable energy in TFEC were China, Germany, Italy, Spain, and the United Kingdom. All these countries also made substantial improvements in their RISE scores for renewable energy and reached scores in the 60–90 range by 2017, indicating improved policies and regulations supporting renewable deployment. (*Figure 2.13*).

The world's largest energy supply countries that have improved their energy productivity have also significantly improved their policy and regulation on energy efficiency.⁴ Among the world's largest energy-supply countries, Canada, China, Indonesia, Japan, and South Africa have improved energy productivity the

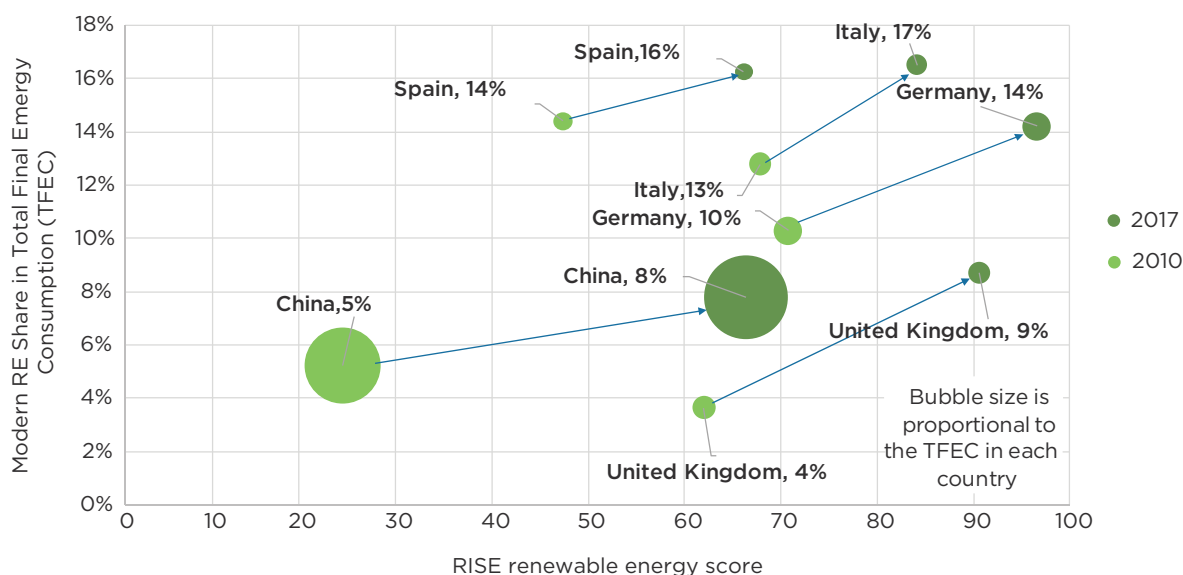
FIGURE 2.12 PROGRESS IN RISE SCORE FOR ACCESS TO ELECTRICITY FOR THE FIVE COUNTRIES WHICH HAVE IMPROVED THEIR ACCESS RATE THE MOST, 2010-2017



Note: 2016 electrification data was used from the Tracking SDG7 report.

Source: World Bank, RISE 2018, World Bank Tracking SDG7 the Energy Progress report 2018

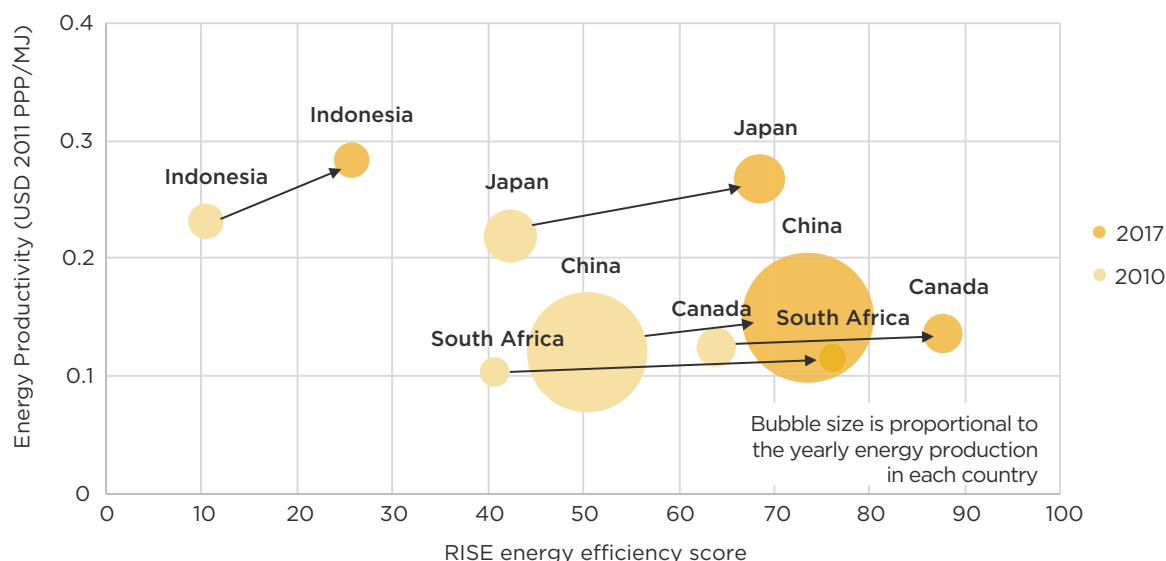
FIGURE 2.13 PROGRESS IN RISE SCORE FOR RENEWABLE ENERGY FOR THE FIVE COUNTRIES WHICH HAVE IMPROVED THE MOST THEIR SHARE OF MODERN RENEWABLE ENERGY IN TFEC, 2010-2017



Note: 2015 TFEC data was used from the Tracking SDG7 report.

Source: World Bank, RISE 2018, IEA, IRENA, UNSD Tracking SDG7: The Energy Progress Report 2018

FIGURE 2.14 PROGRESS IN RISE SCORE FOR ENERGY EFFICIENCY FOR THE FIVE COUNTRIES WHICH HAVE IMPROVED ENERGY PRODUCTIVITY THE MOST, 2010-2017



Note: 2015 TPES data was used from the Tracking SDG7 report.

Source: World Bank, RISE 2018, IEA, UNSD Tracking SDG7: The Energy Progress Report 2018

most since 2010 (*Figure 2.14*). All five countries have adopted best-practice policy measures for energy efficiency, resulting in high improvement in RISE scores since 2010. The biggest energy productivity improvements are in China and Indonesia, where policies like efficiency mandates for the largest industrial consumers have been instituted.

GOOD INSTITUTIONS AND ENFORCEMENT ARE ALSO NECESSARY TO ACHIEVE SUSTAINABLE ENERGY RESULTS

Good policies will not yield results without consistent enforcement. Reforms are widely adopted on paper, but often they do not have sufficient enforcement mechanisms to ensure proper implementation and compliance. For example, building codes for energy use might be adopted, but without a proper enforcement body, mandated to test and verify adherence to the codes, the intended energy efficiency improvements would not be achieved in practice. RISE focuses on collecting objective evidence that a particular policy is in place, but the methodology does not allow field verification of whether policies are being enforced

among relevant stakeholders. Nevertheless, RISE includes certain features of the regulatory environment that provide a proxy for the level of effort that a country is dedicating to enforcement. For example, a given standard is more likely to be enforced if there is not only a process in place for reporting compliance information to an established authority, but also a verification system for auditing reported information as well as an incentive framework entailing penalties for non-compliance or inaccurate reporting. A verification system provides prima facie evidence of an intention to enforce, even though enforcement cannot be guaranteed unless this system is effectively implemented. Several additional proxy enforcement indicators of this kind have been incorporated into RISE and provide a measure of the level of attention that countries are giving to enforcement issues (for a full discussion of methodology see Appendix A).

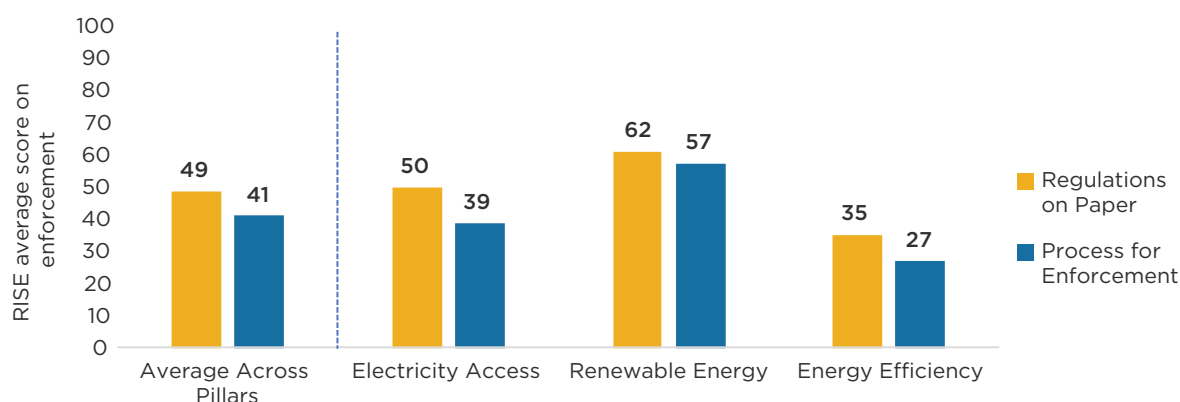
Overall, countries are significantly more advanced on paper regulations than they are on measures to support enforcement (*Figure 2.15*). Comparing RISE scores for regulations on paper (such as laws and regulation) with scores for measures orientated towards

enforcement, gives a sense of the extent of this discrepancy. In every area of sustainable energy, enforcement measures lag behind paper regulations. Overall, countries score on average around 49 for paper regulations and 41 for corresponding enforcement measures. The gap between regulations on paper and enforcement measures is widest for energy access and narrowest for renewable energy.

Nevertheless, countries have made significant progress with enforcement measures over time. Enforcement measures have increased substantially since 2010 across all three pillars (*Figure 2.16*). In the case of renewable energy, the average score for enforcement measures more than doubled since 2010. By contrast, progress with enforcement measures for energy efficiency policies was con-

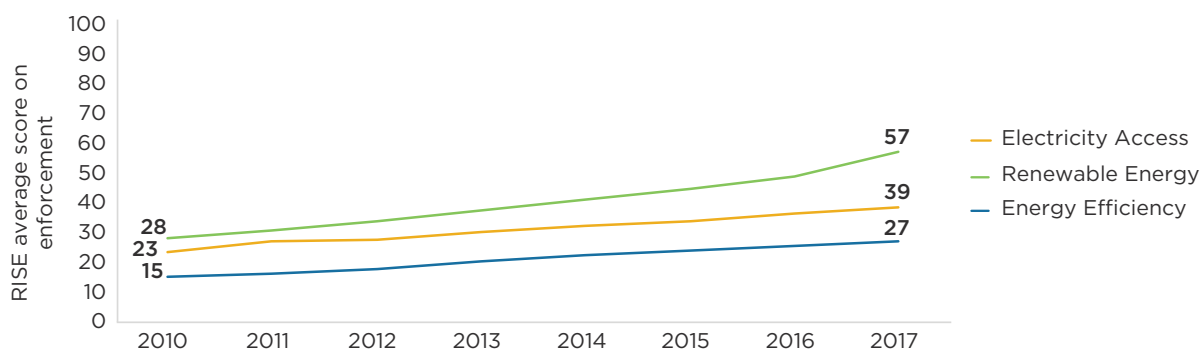
siderably slower and lags a long way behind. Tracking and enforcing energy efficiency is quite complex since most efficiency measures are typically driven by energy savings which involve hypothetical baseline calculations. The enforcement process of measuring utility energy efficiency requirements with third party validation was the least adopted mechanism among all surveyed countries worldwide. For energy access, the least enforced process relates to tracking and reporting grid reliability standards as part of electrification planning. For renewable energy, the least enforced was the process for providing compensation to renewable energy projects when generation is lost due to curtailment after project commissioning.

FIGURE 2.15 REGULATIONS ON PAPER VERSUS ENFORCEMENT MEASURES FOR RISE SCORES GLOBALLY, 2017



Source: World Bank, RISE 2018

FIGURE 2.16 EVOLUTION OF ENFORCEMENT PROCESSES FOR ALL THREE PILLARS, 2010-2017



Source: World Bank, RISE 2018

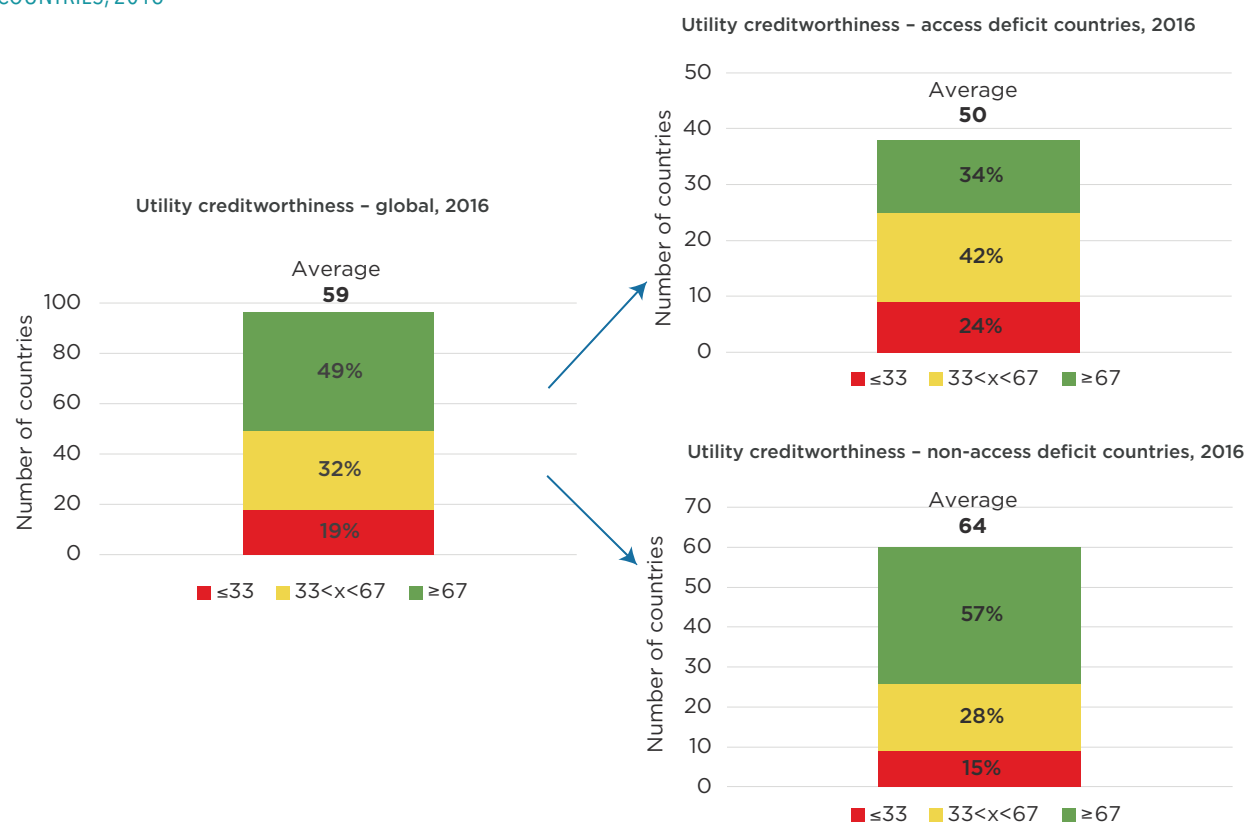
WEAK CREDITWORTHINESS UNDERMINES THE ABILITY TO FINANCE SUSTAINABLE ENERGY SCALE-UP

Without creditworthy utilities, it will prove difficult to raise finance for the sustainable energy agenda. Progress on the sustainable energy agenda depends not only on policies and effective institutional enforcement, but also on the ability to attract financing for sustainable energy investments. Utilities are usually the central actor in any power sector and play a crucial role in the development of energy access, renewable energy and energy efficiency. Financially healthy and creditworthy utilities have better capacity to invest from their own resources and from borrowings, enabling them to expand the number of connections and provide better services to existing consumers. Utilities are often also the main purchasers of renewable energy, and one of

the main deterrents for investors is the risk that a financially weak utility may not be able to follow through on its contractual obligations to pay for its power purchases in a timely fashion. Utilities also play a central role in energy efficiency, by implementing programs that yield significant energy savings.

Only half of utility companies in RISE countries were deemed creditworthy in 2017.⁵ Utility creditworthiness, was measured using financial ratios emanating from a distribution company's financial statements (balance sheet, cash flow statement, and income statement), in about three quarters of countries for which such financial statements were publicly available. There was a higher concentration of creditworthy utilities in countries that have already achieved universal access to electricity (non-access-deficit countries) (57 percent), compared to countries that are working toward universal access (access-deficit countries) (34 percent) (Figure 2.17).⁶

FIGURE 2.17 RISE SCORE FOR UTILITY CREDITWORTHINESS, GLOBAL VS. ACCESS-DEFICIT COUNTRIES VS. NON-ACCESS-DEFICIT COUNTRIES, 2016

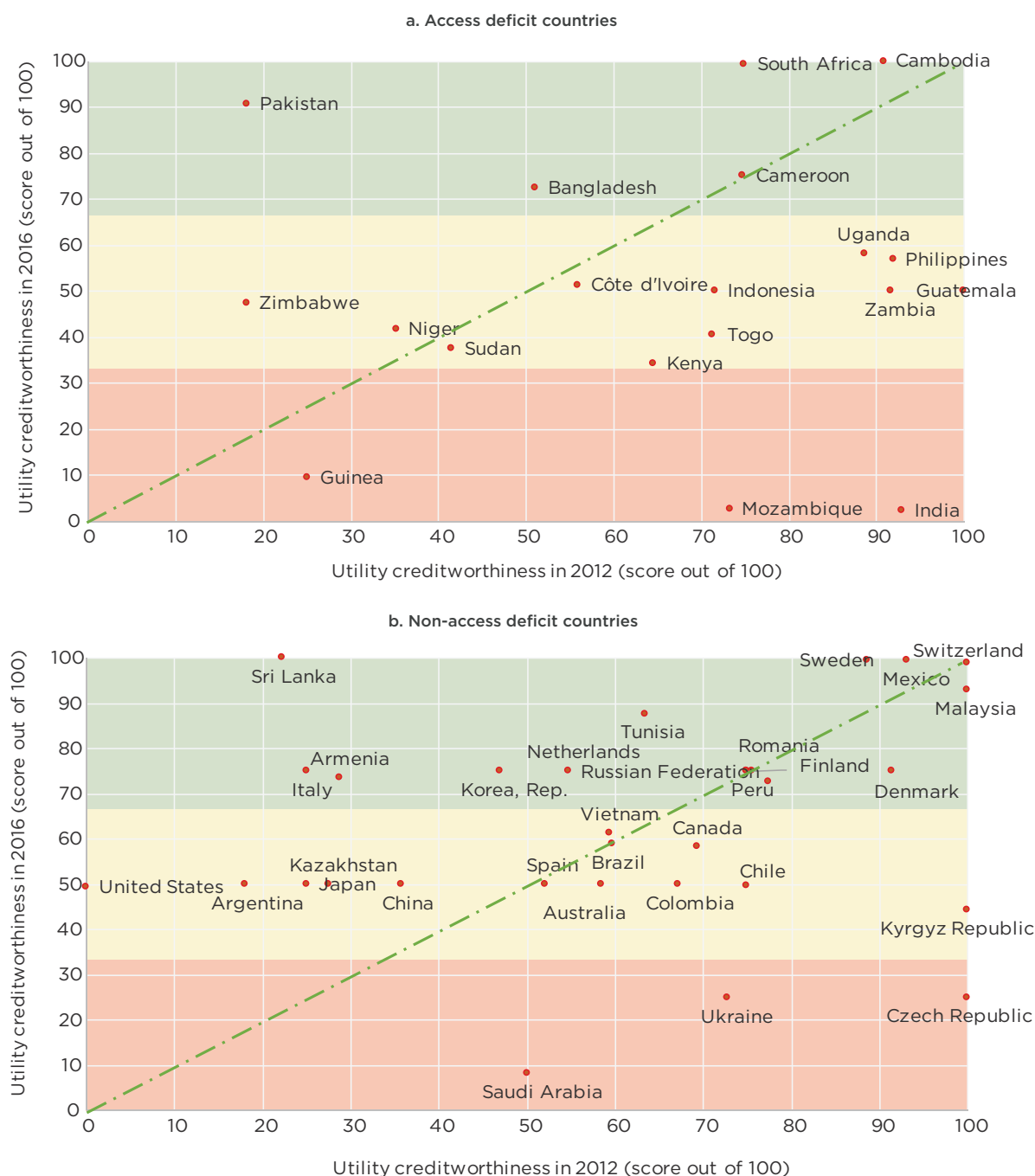


Source: World Bank, RISE 2018

Utility creditworthiness has declined since 2012, with sharper declines in access-deficit countries than in other countries⁷ (Figure 2.18). Utilities that become creditworthy do not necessarily stay creditworthy, as utility finances are not always on an improving trend. Factors like the changing fuel costs and exchange

rates, as well as the magnitude of capital investment programs and associated financing costs can cause utilities to fall in and out of creditworthiness over time. Remarkably, utility creditworthiness declined on average from 2012 to 2016 (Figure 2.18), although some individual utilities became more creditworthy

FIGURE 2.18 CREDITWORTHINESS RATIOS FOR ACCESS-DEFICIT AND NON-ACCESS DEFICIT COUNTRIES, 2012 AND 2016

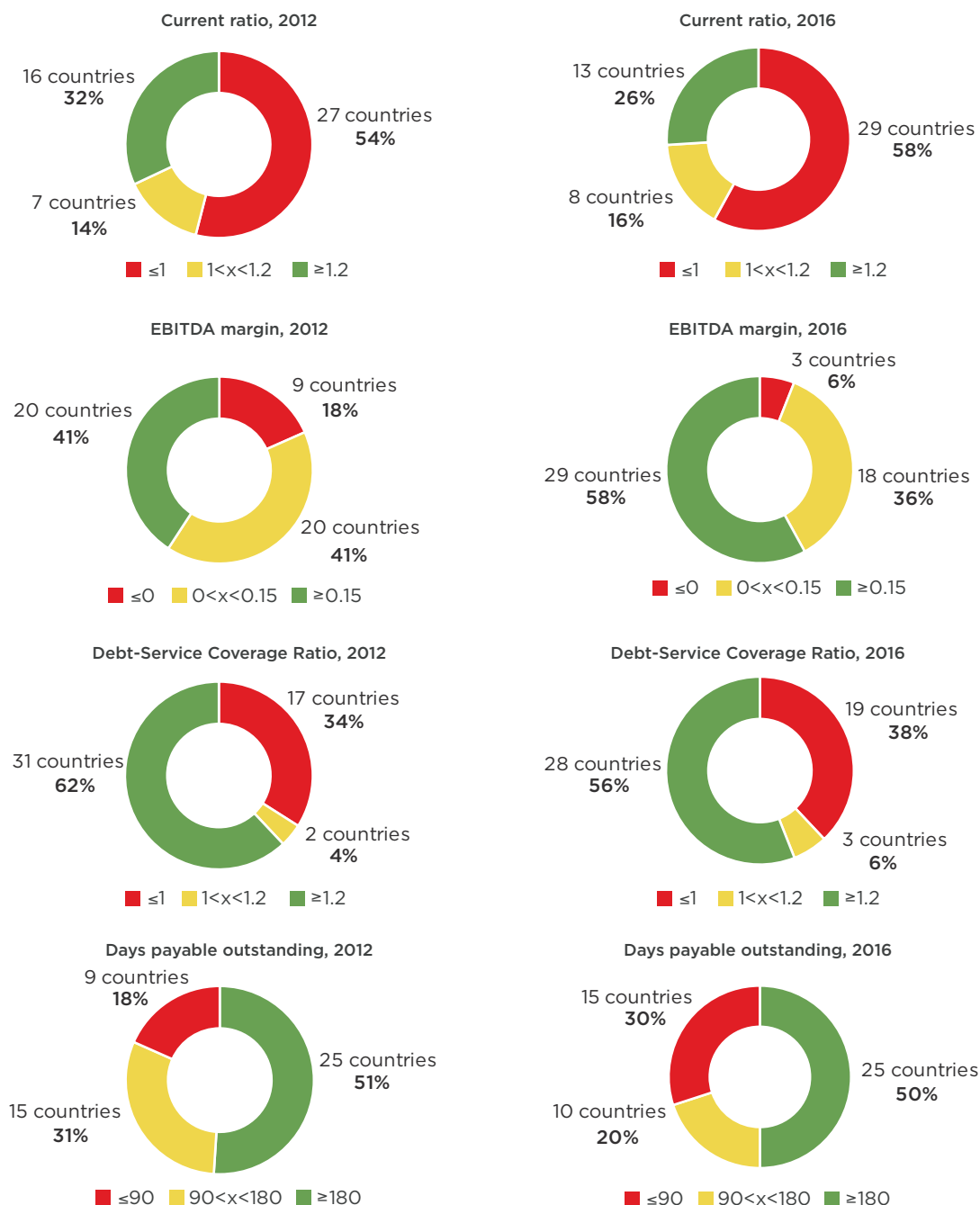


Source: World Bank, RISE 2018

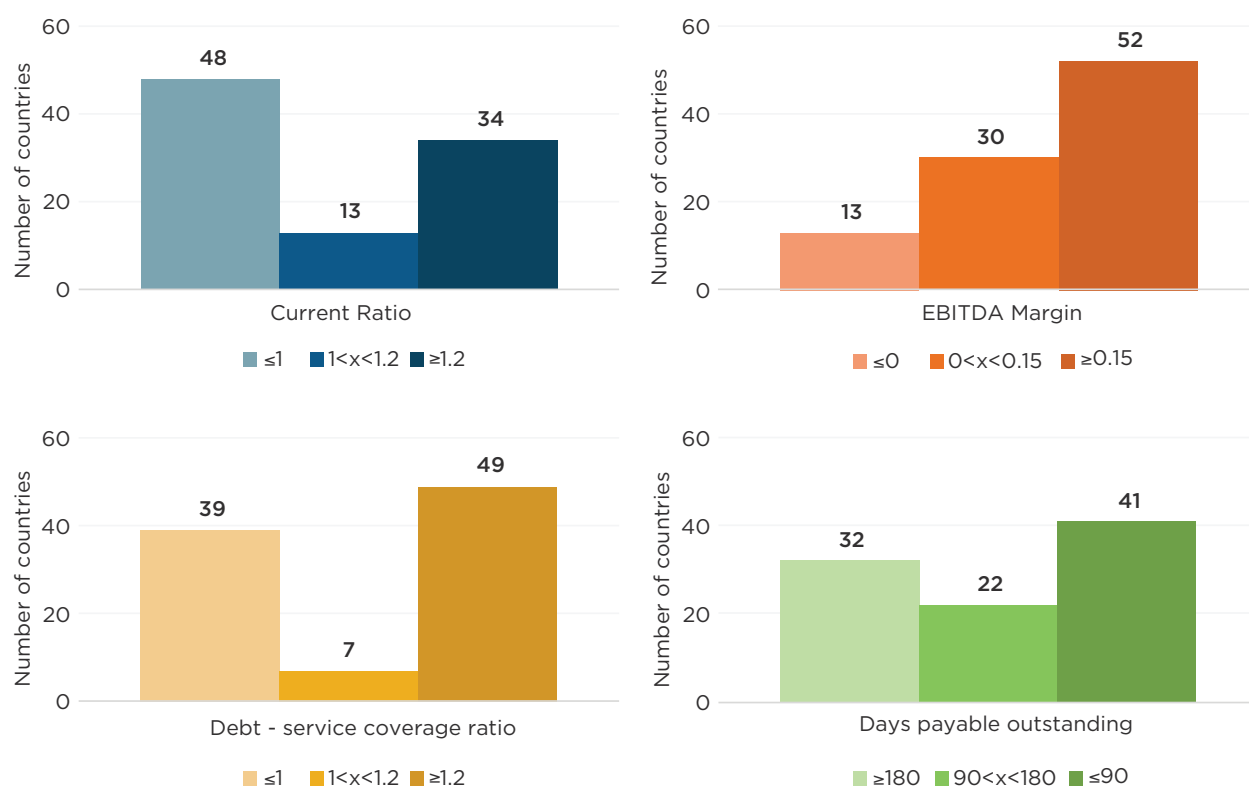
during this period (rising above the diagonal line) even as others became less creditworthy (falling below the diagonal line). This shifting pattern can be observed in both access-deficit (Figure 2.18(a)) and non-access-deficit (Figure 2.18(b)) countries, but the tendency for utilities to become less creditworthy was more pronounced in access-deficit countries.

Not all creditworthiness indicators deteriorated to the same extent. The RISE creditworthiness score is based on a composite of four financial indicators. Examining these indicators individually helps to identify the nature of the financial problems faced by utilities (Figure 2.19). Between 2012 and 2016, there was an overall improvement in the EBITDA

FIGURE 2.19 DISTRIBUTION OF COUNTRIES BASED ON FOUR TYPES OF UTILITY CREDITWORTHINESS RATIOS, 2012 AND 2016



Source: World Bank RISE 2018

FIGURE 2.20 DISTRIBUTION OF UTILITY CREDITWORTHINESS RATIOS, 2016

Source: World Bank RISE 2018

margin, although all the other creditworthiness indicators deteriorated, in particular days payable outstanding.

Utilities are having difficulty honoring their debts to vendors. Further insight can be gained by examining the distribution of scores for different creditworthiness indicators (Figure 2.20). A strong majority of countries show reasonable EBITDA margins. However, performance on the current ratio and debt service coverage ratio show a sharp divide between one large group that performs relatively well and a second group that performs quite poorly. A large majority of utilities report days payable outstanding in excess of the 90 day norm, indicating that one of the most challenging areas is honoring debts to vendors.

MOMENTUM BEHIND THE UPTAKE OF CLEAN ENERGY POLICIES IS PARTICULARLY STRONG

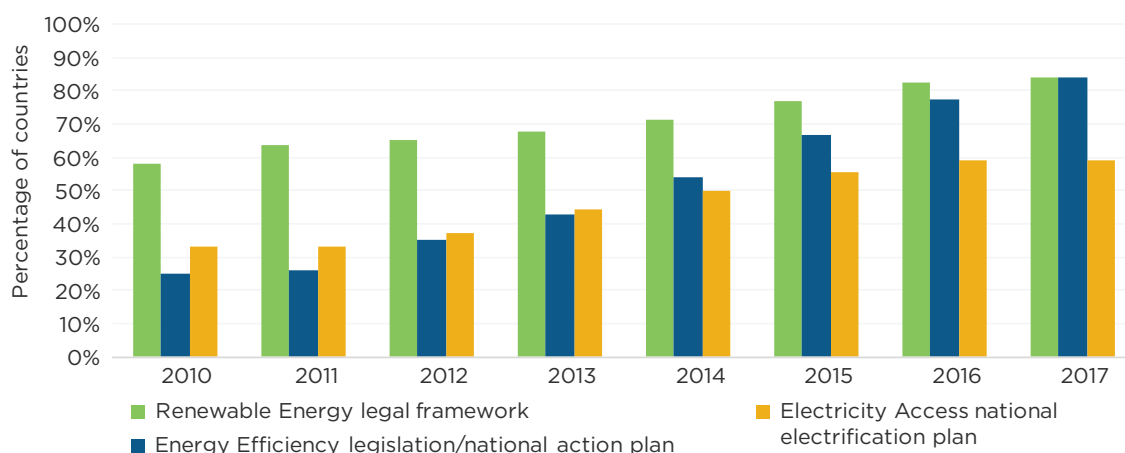
With respect to clean energy strategy, policymakers in most countries tended to move first on developing a legal framework for renewable energy, while action on energy efficiency came later. As of 2010, around 60 percent of countries already had a legal framework for renewable energy whereas only some 20 percent had an equivalent legal framework for energy efficiency. This gap has narrowed over time, such that by 2017, around 80 percent of countries had targets both for renewable energy and for energy efficiency (Figure 2.27). This catch-up has been driven largely by countries in Asia, where rapid growth in energy demand has spurred policy makers to take stronger measures on energy efficiency.

Even among access-deficit countries, the development of a framework for renewable energy has tended to precede the adoption of an electrification master plan. As of 2017, almost 60 percent of access-deficit countries had an officially approved national electrification plan, while 76 percent had a legal framework for renewable energy in place. While a small number of access-deficit countries have started to engage energy efficiency policies (Cambodia, Cameroon, Côte d'Ivoire, India, Kenya, Philippines, and South Africa).

International agreements have been an important driving force behind the uptake of

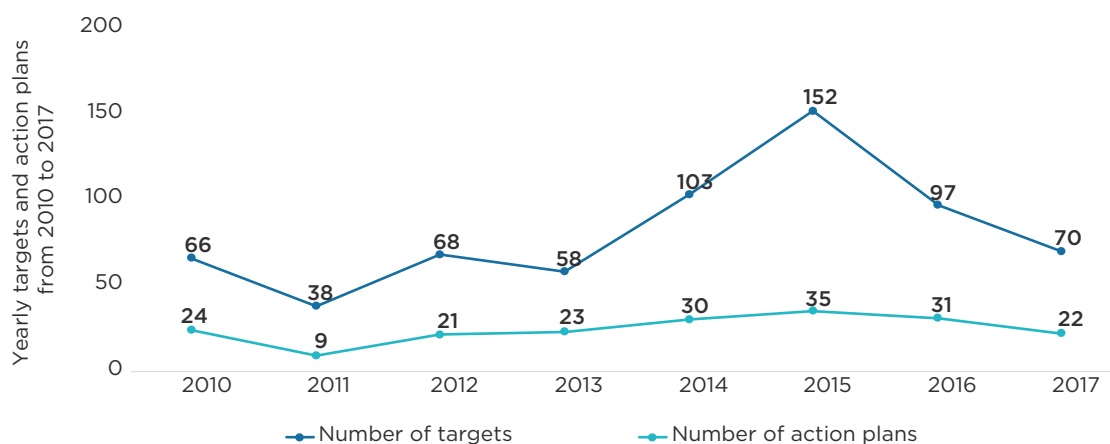
policy targets for clean energy. International climate talks culminating in the 2015 Paris Climate Accord and Nationally Determined Contributions, along with SDG 7, covering renewable energy, energy efficiency, and energy access, have helped to focus policy makers' attention on the sustainable energy agenda. The response is evident in the surging number of national renewable and energy efficiency targets set annually, which more than doubled in the lead-up to Paris and subsided thereafter (*Figure 2.22*). This was also accompanied by an increase in the adoption of country level action plans, although the response was nowhere near as strong as can be seen for target-setting.

FIGURE 2.21 PERCENTAGE OF COUNTRIES WITH PLANS FOR ELECTRICITY ACCESS*, RENEWABLE ENERGY, AND ENERGY EFFICIENCY, 2010-2017



*In the case of electricity access, the percentage is out of 54 access deficit countries.
Source: World Bank, RISE 2018

FIGURE 2.22 RENEWABLE ENERGY AND ENERGY EFFICIENCY TARGETS AND ACTION PLANS ADDED ANNUALLY BEFORE AND AFTER THE PARIS CLIMATE ACCORDS, 2010-2017



Source: World Bank RISE 2018

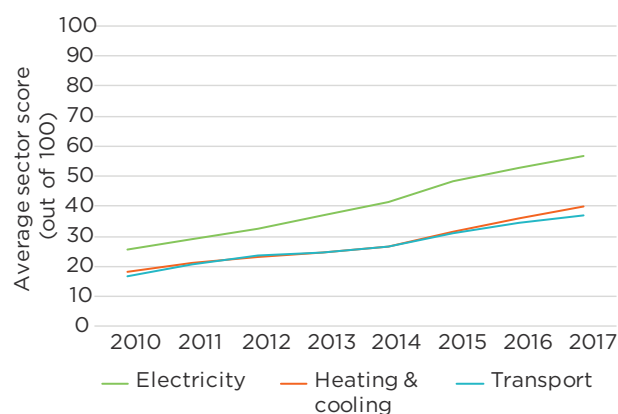
CLEAN ENERGY POLICIES REMAIN TOO NARROWLY FOCUSED ON THE ELECTRICITY SECTOR

Electricity remains the dominant focus for policy efforts on renewable energy and energy efficiency. Energy consumption encompasses three main areas: electricity; transportation; and heating and cooling. Of these, electricity represents only about 20 percent, while the remainder is divided between transportation (around 50 percent) and heating and cooling (around 30 percent). As shown in the Tracking SDG7 report, the renewable energy share for electricity has climbed significantly in recent years, while the renewable energy share for transportation remains very low and the share for heating has even fallen. Progress on energy efficiency in the transportation sector has also been relatively slow. The RISE results show different levels of policy effort across these end-use sectors. In the case of renewable energy, countries score much higher on policy measures to promote renewable electricity (close to 60) than on policy measures to promote renewable transportation and heating and cooling sector (at around 40) (*Figure 2.23*), and the difference has been increasing over time. In the case of energy ef-

iciency, countries score much higher on policies to promote energy efficiency in the electricity sector (close to 80) than on measures to promote energy efficiency in transportation (little more than 20). Nevertheless, the policy scores for renewable energy and energy efficiency in the heating and cooling have almost doubled since 2010 (*Figure 2.23*). Where little progress has been made is on policies to promote energy efficiency in transportation.

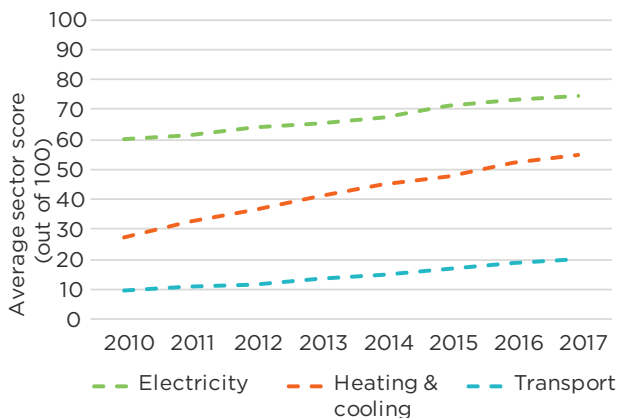
Nevertheless, there is wide variation in policy prioritization of end-use sectors across different geographical regions. Most notably, among OECD countries there is no difference in the renewable energy policy scores according to end-use sector (*Figure 2.25(a)*). Indeed, countries such as Australia, Germany, Ireland, Italy, and the United States have targets in place for all three sectors. The promotion of renewable energy use in the transportation sector has received very little attention in South Asia, Sub-Saharan Africa and the Middle East and North Africa. By contrast, Latin America and the Caribbean has made significant efforts to promote renewable energy use in transportation but has paid little attention to the heating and cooling sector. When it comes to energy efficiency, there is a more consistent pattern across all regions with policies for the electricity sector significantly ahead of heat-

FIGURE 2.23 RISE RENEWABLE ENERGY SCORES BY SECTOR, 2010–2017



Source: World Bank RISE 2018, WDI 2018

FIGURE 2.24 RISE ENERGY EFFICIENCY SCORES BY SECTOR, 2010–2017

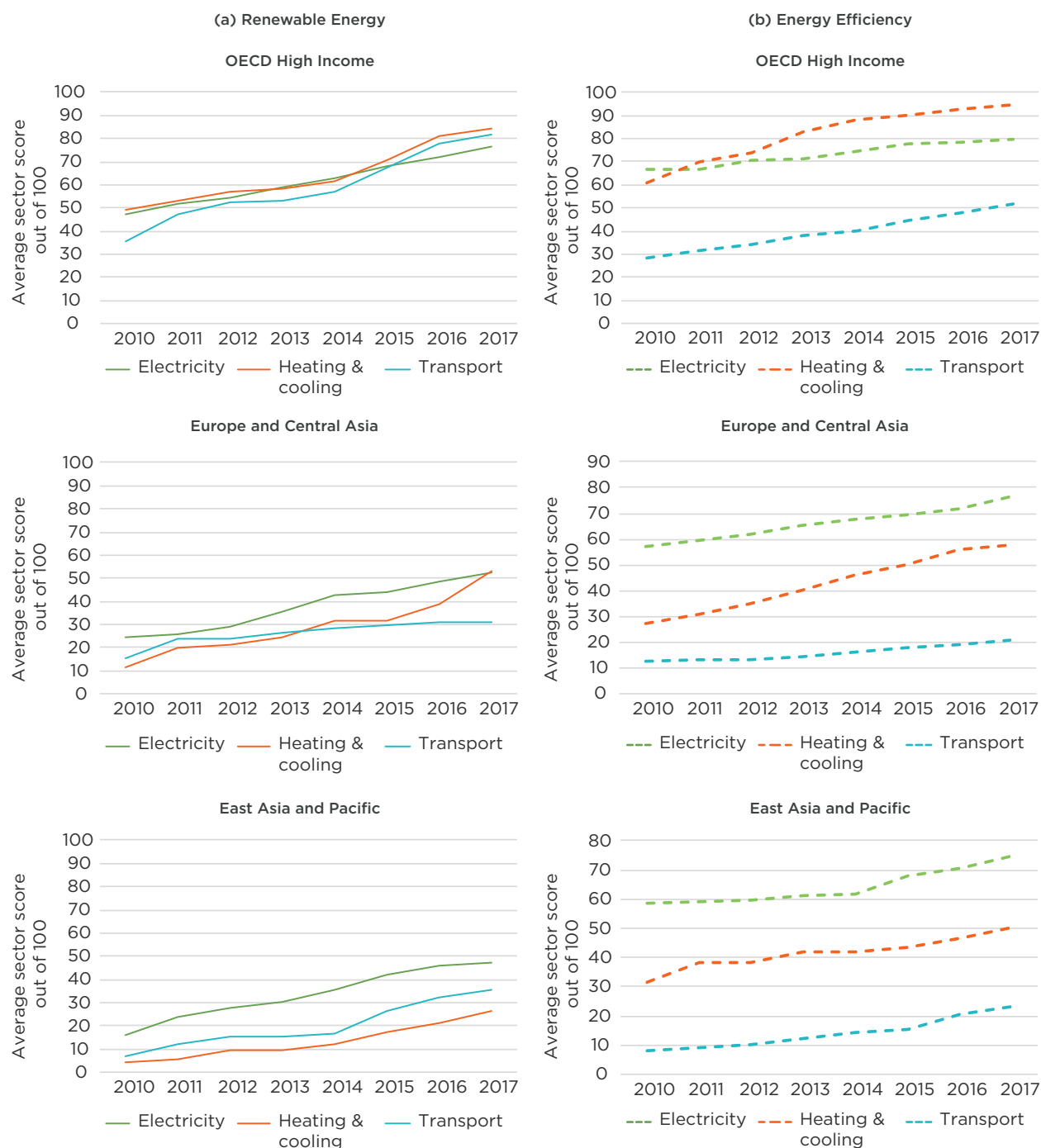


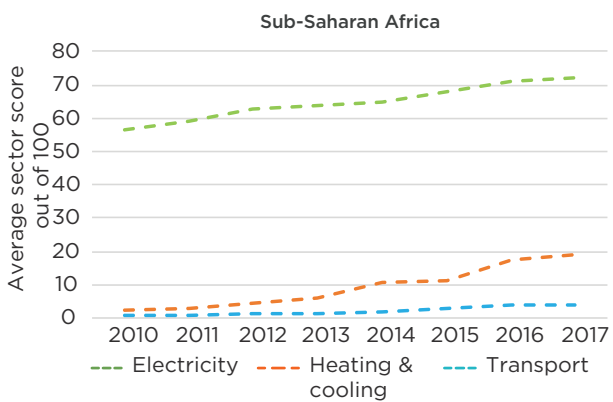
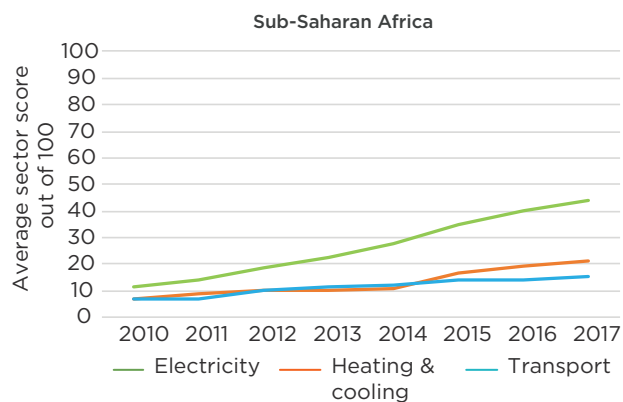
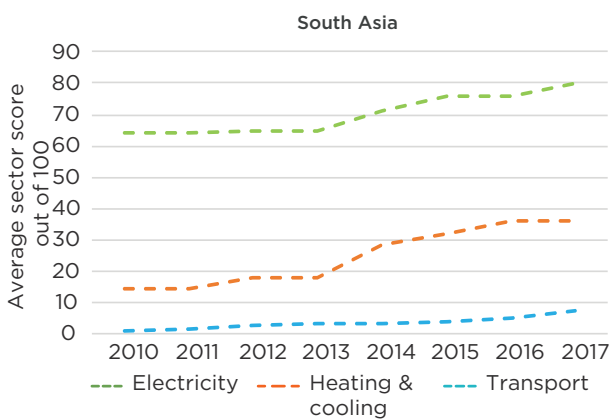
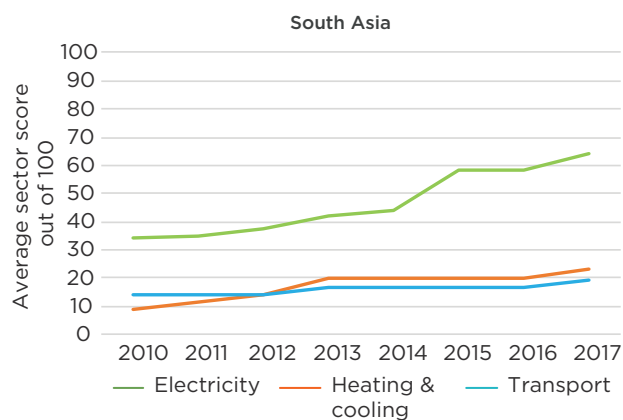
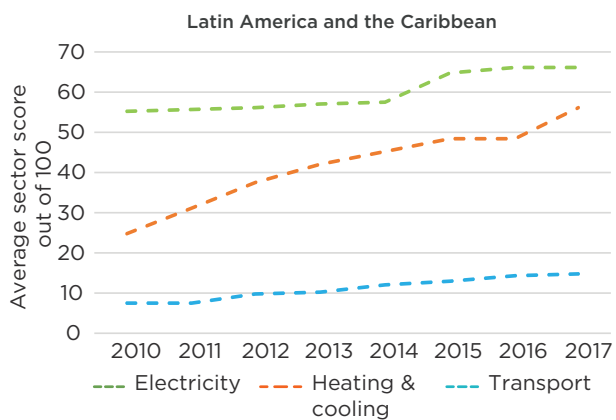
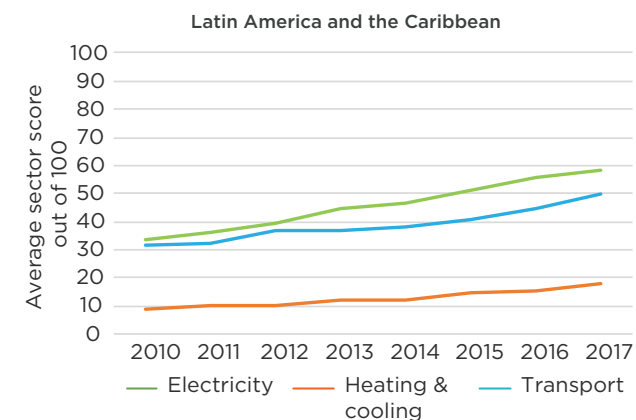
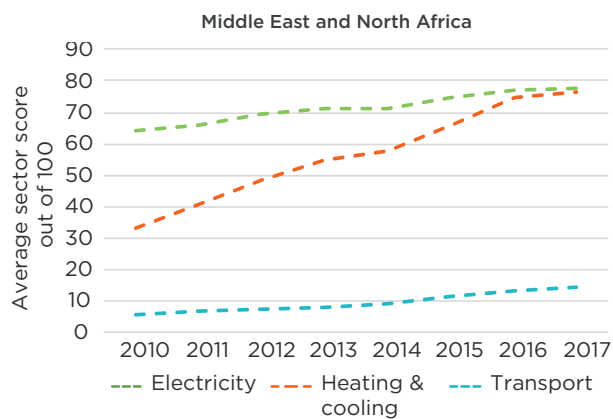
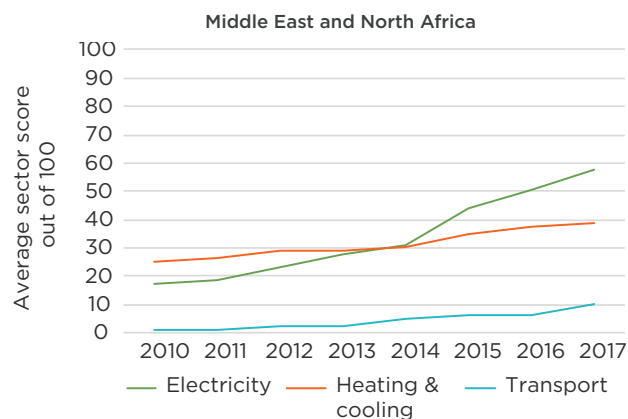
Source: World Bank RISE 2018, WDI 2018

ing and cooling, which in turn is significantly ahead of transportation (*Figure 2.25(b)*). Only in OECD countries, the Middle East and North Africa, and Latin America and the Caribbean, the level of policy attention to energy efficiency in heating and cooling comes close to that for electricity.

There is some evidence that policymakers are beginning to take more notice of the clean cooking agenda, but significant room for improvement remains. According to the Tracking SDG7 report, progress towards universal access to clean cooking has been particularly slow with 3 billion people living without ac-

FIGURE 2.25 RENEWABLE ENERGY AND ENERGY EFFICIENCY SCORES BY SECTORS AND REGIONS, 2010-2017



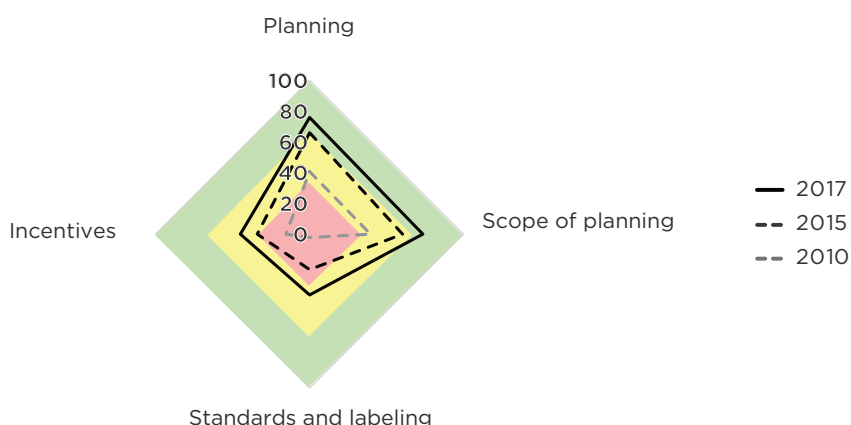


Source: World Bank, RISE 2018

cess in 2016. As part of RISE 2018, a new index for the policy environment on clean cooking was piloted in 12 countries across all regions which together constitute over 55 percent of the global deficit for access to clean cooking. The results show that there has been significant progress since 2010 in establishing planning frameworks for clean cooking, but the development of incentives for the adoption of clean cooking, as well as standards and labeling of cookstoves still lag far behind (*Figure 2.26*). In most of the RISE pilot countries, the policy emphasis has been geared towards

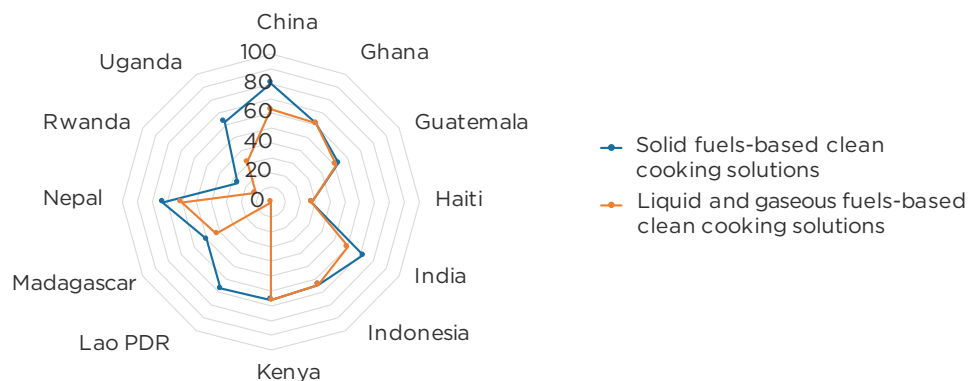
solutions that are solid-fuels-based and more fuel-efficient but not necessarily ‘clean,’ as opposed to electric-powered or liquid and gaseous-fuel-based cooking solutions, which are often the cleanest options (*Figure 2.27*)⁸. While countries work toward shifting to cleaner cooking solutions, it is important to have policies that set minimum emissions and efficiency requirements based on the country context and encourage consumer adoption of cooking solutions as clean as possible at the point of use.

FIGURE 2.26 PROGRESS IN CLEAN COOKING POLICY FRAMEWORK FOR PILOT COUNTRIES, BY INDICATOR, 2010 – 2017



Source: World Bank, RISE 2018

FIGURE 2.27 SOLID-FUEL-BASED VS. LIQUID AND GASEOUS-FUEL-BASED CLEAN COOKING SOLUTIONS POLICY, BY COUNTRY, 2017



Source: World Bank, RISE 2018

ENDNOTES

² Figure 2.3 includes 133 countries surveyed for renewable energy and energy efficiency pillars and 54 access- deficit countries surveyed for electricity access. Electricity access policies were assessed in countries where less than 90% of the population or more than 5 million people lack access to electricity.

³ Data on access deficits is derived from IEA, IRENA, UNSD, World Bank, and WHO, Tracking SDG7: The Energy Progress Report, 2018 (https://trackingsdg7.esmap.org/data/files/download-documents/tracking_sdg7-the_energy_progress_report_full_report.pdf).

⁴ Energy productivity is defined as the ratio of GDP output divided by energy production (measured by total primary energy supply). Energy productivity is the inverse of energy intensity, the metric used to track energy efficiency for SDG 7.3.

⁵ Based on data available for 96 countries in 2016.

⁶ In Figure 2.27, as of December 31, 2017, audited and published utility financial data was available only for 2016, so the utility creditworthiness analysis pertains to 2016, and not 2017 as elsewhere in this report.

⁷ For 50 countries, both access deficit and non-access deficit, where data is available for 2012, 2014 and 2016.

⁸ Liquid and gaseous fuels included in this distinction are biogas, ethanol, LPG, and natural gas including piped natural gas (PNG).