

Fostering Effective Energy Transition

JRC Week on Composite Indicators and Scoreboards
7th Nov, 2019



The global energy system is transforming at an unprecedented speed



-88%

Solar PV LCOE reduction (2009 – 2018)¹



- 69%

Onshore wind LCOE reduction (2009 – 2018)²



- 33%

Projected utility scale energy storage cost reduction (2016 – 2024)³

Google



100%

Powered by renewable energy



2%

Of total global electricity generation consumed by data centers in 2017



+ 65%

Increase in the number of oil and gas companies with greater \$1bn revenues between 2005 and 2010



70%

New power capacity additions globally from renewable sources in 2017

2013

The year since when annual global renewables capacity surpassed conventional capacity additions



135 million

People gained access to electricity each year between 2014 - 16



20 Million

Branded pico solar products sold by mid-2015

100 Companies

Focusing on stand-alone solar home system kits



10.3 Million

Employed in renewable energy in 2017



11.2 bpd

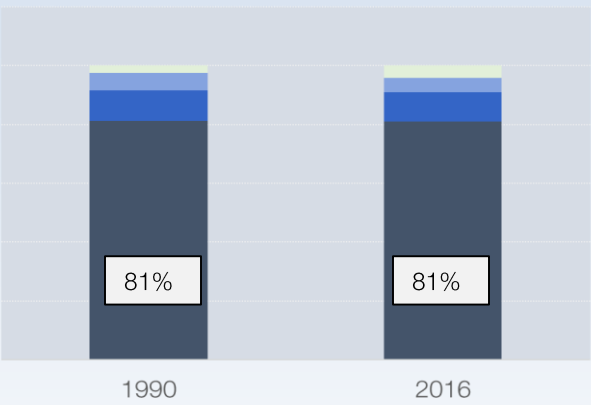
US crude oil production in August 2018, surpassing Russia and Saudi Arabia as world's largest producer

1 Unsubsidized, from 0.36 to 0.1 USD/kWh 2 Unsubsidized, From 0.135 to 0.042 USD/kWh 3 Li-Ion; From 960 USD/kWh in 2016 to \$650/kWh in 2024

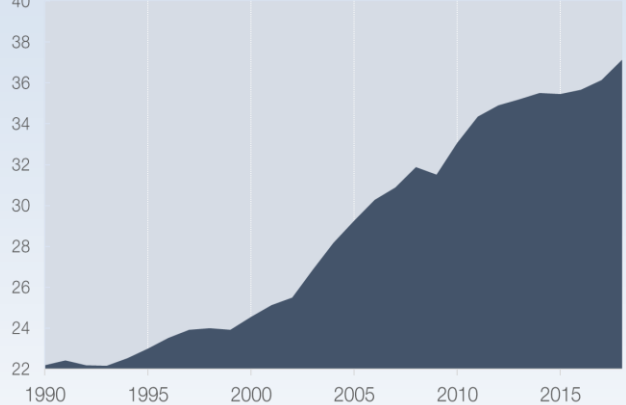
SOURCE: Lazard, IRENA, BNEF, IEA, EIA, IHS, IFC, Tracking SDG7, New York Times

But, is the speed of energy transition fast enough?

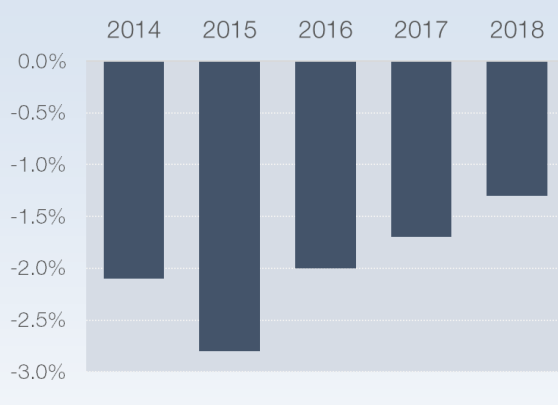
Share of fossil fuels in global energy mix is constant since 1990



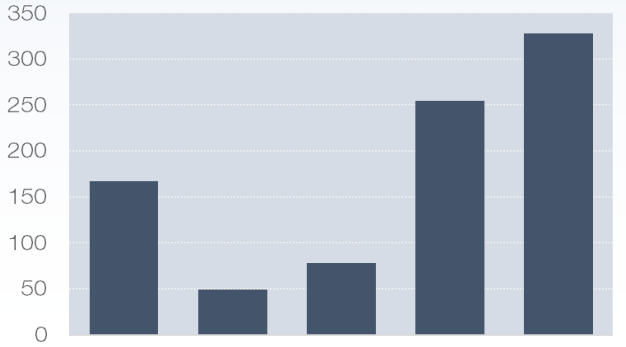
Global CO2 emission from fuels increasing at a faster rate, +2.7% in 2018



The rate of energy intensity improvements has reduced









Global primary energy demand grew by 2.3% in 2018



Youth rise across the world demanding action on climate change



Competing narratives on the speed of energy transition

	Gradual Narrative	Rapid Narrative
 <p>Starting Point</p>	<p>Stock: New energy technologies too small, will take decades</p>	<p>Flow: New energy technologies make up for most of the growth in supply</p>
 <p>Technology growth</p>	<p>Linear: considering technical and economic barriers</p>	<p>Exponential: Solar PV and Onshore Wind are already cheaper than fossil fuels for power generation</p>
 <p>Policy changes</p>	<p>Incremental: Strong inertia a barrier for policymakers</p>	<p>Transformative: Political changes are uncertain, shocks are highly probable</p>
 <p>Emerging markets</p>	<p>Followers: Carbon intensive economic development pathways</p>	<p>Leaders: Opportunity to leapfrog to less energy intensive economic development</p>
 <p>Exporting countries</p>	<p>Safe: Fossil fuel exporting countries resistant, and emerging markets will fuel demand growth</p>	<p>Vulnerable: Four out of five people live in countries that import fossil fuels</p>
 <p>Finance</p>	<p>Traditional: Investors will target better ROI</p>	<p>Innovative: Energy transition new growth area for financial sector (CDP, TCFD, ESG, etc.)</p>



Energy Transition Index Framework

Energy system benchmarking at World Economic Forum

ENERGY ARCHITECTURE PERFORMANCE INDEX

ENERGY TRANSITION INDEX

2013

2014

2015

2016

2017

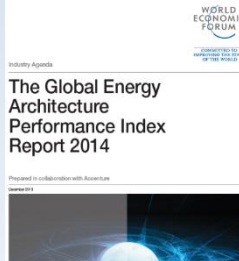
2018

2019

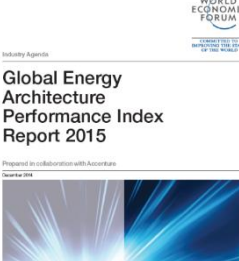


Launch of Energy Architecture Performance Index

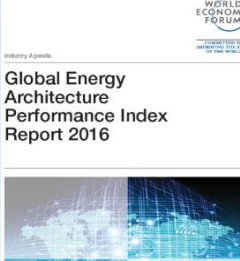
115 Countries



Case studies on challenges for EU28, NAM, MENA, BRICS, ASEAN, Sub-Saharan Africa



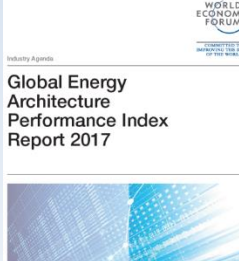
Thematic focus on energy reforms in major energy consuming economies



Deep dive on "Energy Access and Security"

93%

Of global Total primary energy supply



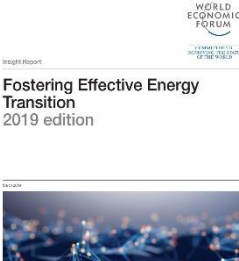
Deep dive on "Energy Sector Governance"



Revised methodology element, launched Energy Transition Index

98%

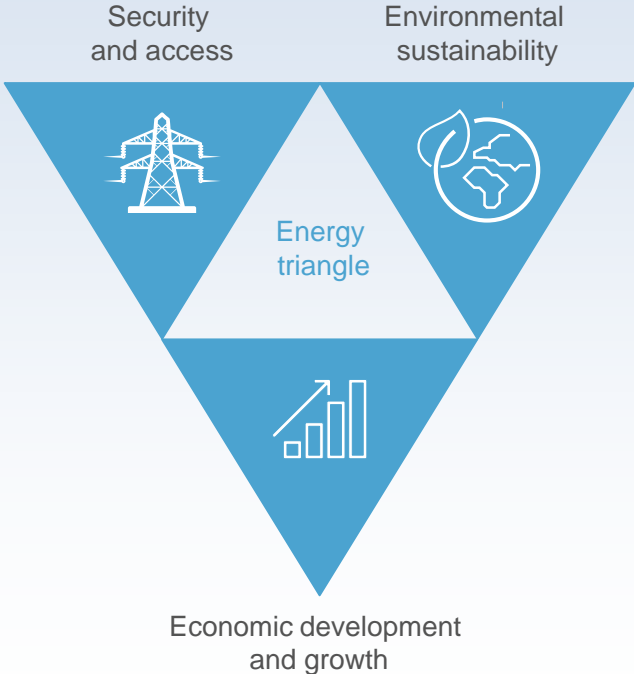
Of global GDP (nominal)



Regional energy transition challenges focus, coverage on speed and complexity

System Performance Imperatives

System performance imperatives



Economic growth and development

Extent to which a country's energy architecture adds or detracts from the economy



Environmental sustainability

Environmental impact of energy supply and consumption

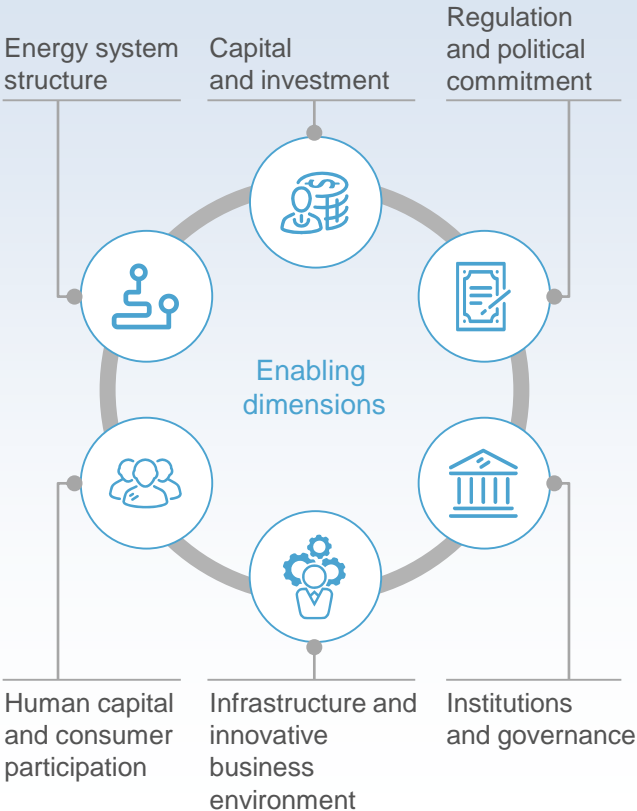


Energy access and security

Extent to which a energy supply is secure, accessible and diversified

Transition readiness enabling dimensions

Transition readiness enabling dimensions



Energy System Structure

- Technology path dependency
- Energy consumption per capita

Capital and Investment

- Access to credit
- Investment in energy efficiency and renewable energy

Regulation and Political Commitment

- Regulatory Stability and Commitment
- Policy and regulatory support for sustainable energy

Institutions and Governance

- Manageable risk
- Increased transparency
- Ease of doing business

Infrastructure and Innovative Business Environment

- Transport infrastructure
- Trade logistics
- Technology availability

Human Capital and Consumer Participation

- Jobs in low carbon industry
- Quality of Education

Indicators + Data Partners

Criteria for selecting indicators

Output variables

Measuring output oriented observational data or best available proxy

Reliability

Sourced from renowned institutions

Reusability

Maintain same data partners on regular basis, for annual updates

Completeness

Adequate global and temporal coverage

Quality

Represents best available measures, given constraints

Data Sources



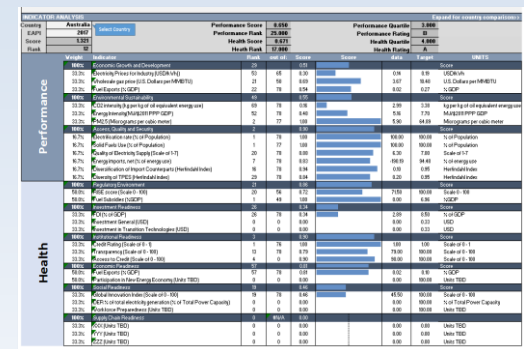
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How ETI rankings can be used

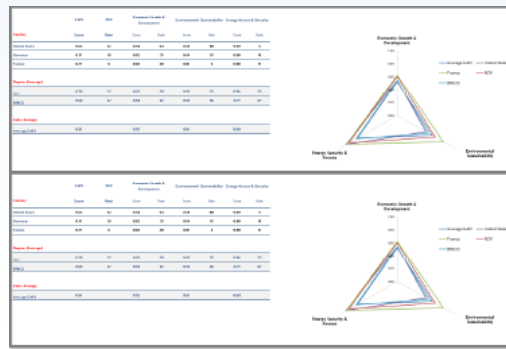
Global Ranking



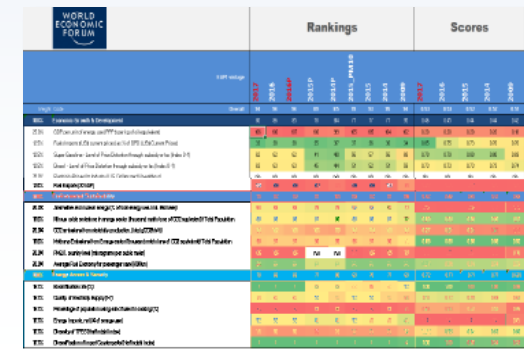
Country Profile



Peer-group Comparison



Historical Comparison



1 System performance

Rank

Score

Current performance

Describes current system architecture performance



2 Transition readiness

Rank

Score

Energy transition readiness today

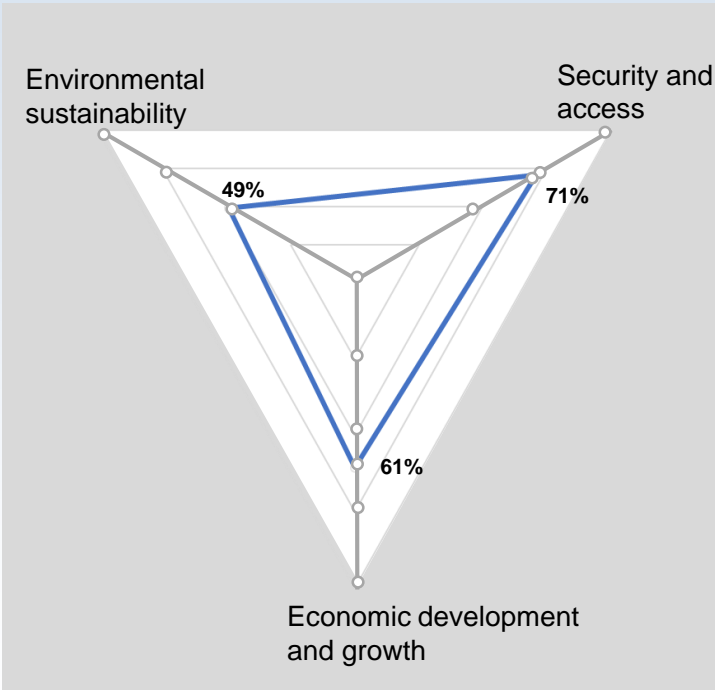
Describes current readiness along key dimensions (regulatory, financial, institutional, economic, social)



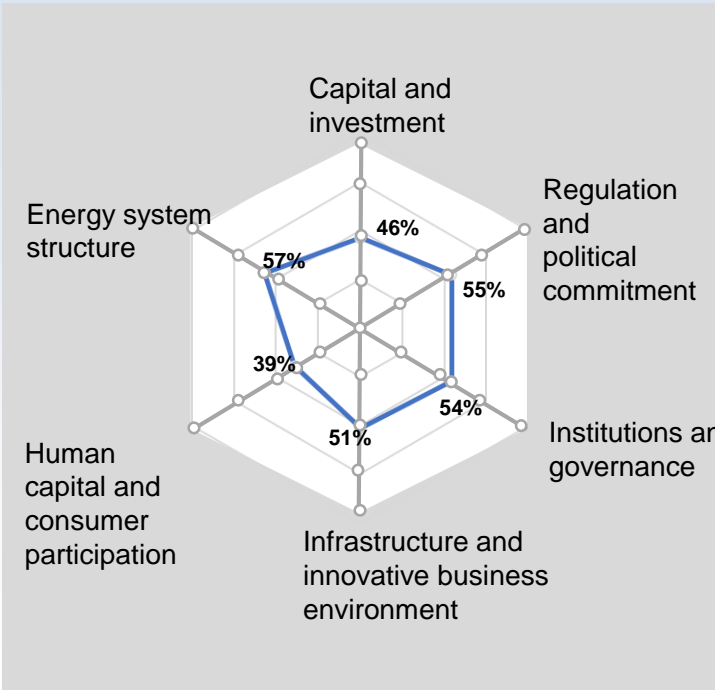
Energy Transition Index – Insight categories

Insight # 1 – Global Average Scores

System performance scores

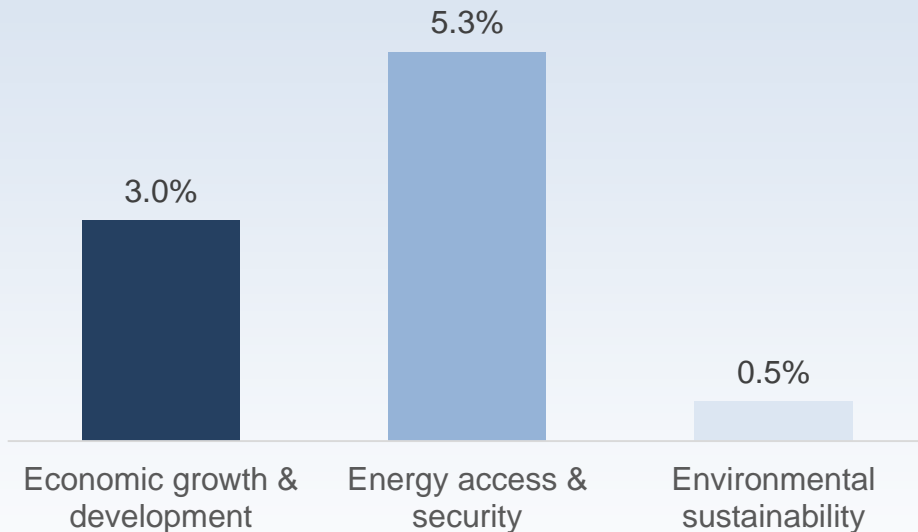


Transition readiness scores

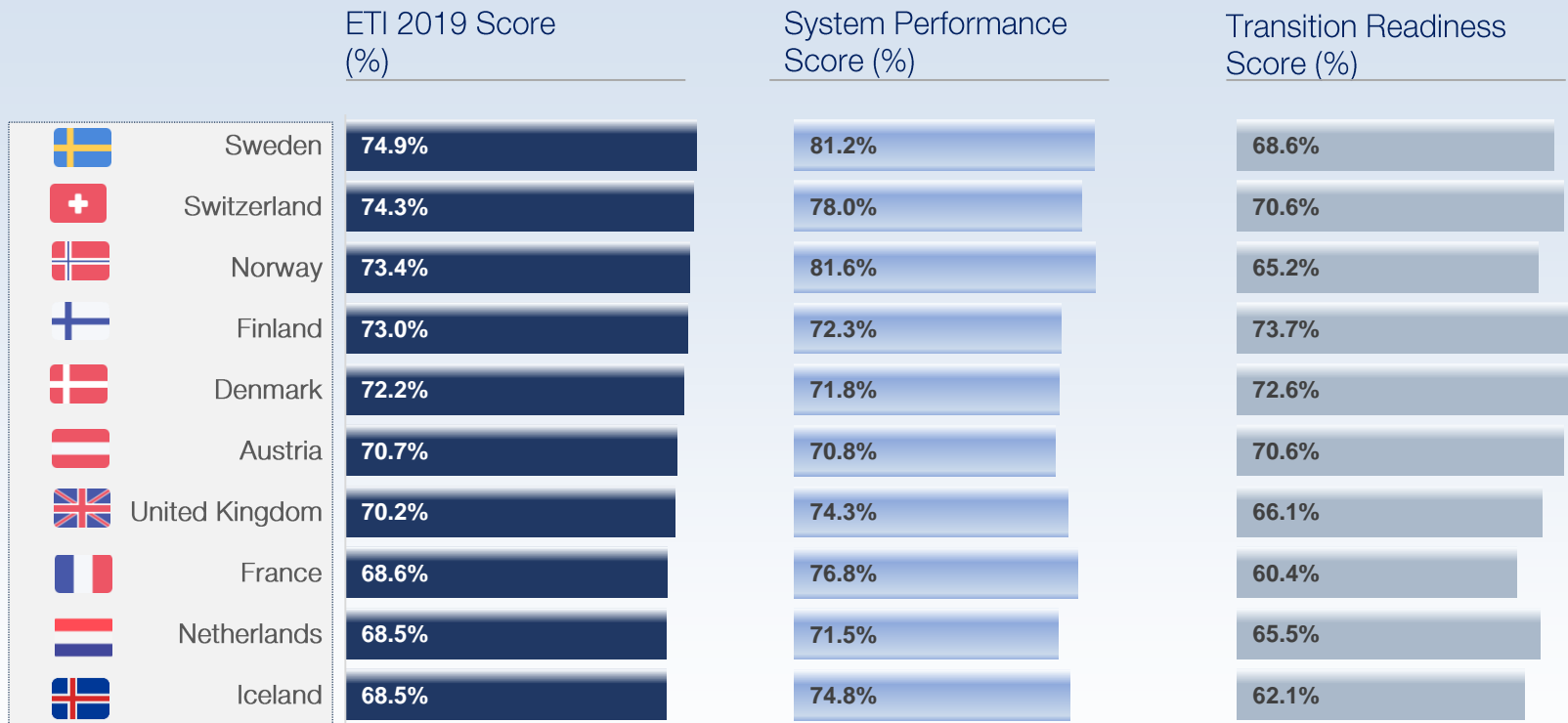


Insight # 2: System Performance Trends: 2014 - 2019

- Highest improvement on “Energy Access and Security” dimension, progress on universal energy access, diversification of fuel mix, and low concentration on import counterparts main contributors
- Progress on “Environmental Sustainability” dimension negligible. Slow improvement on energy intensity and continued dominance of fossil fuels in energy mix primary reasons



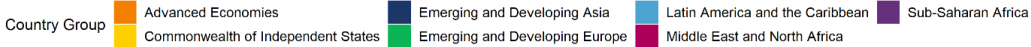
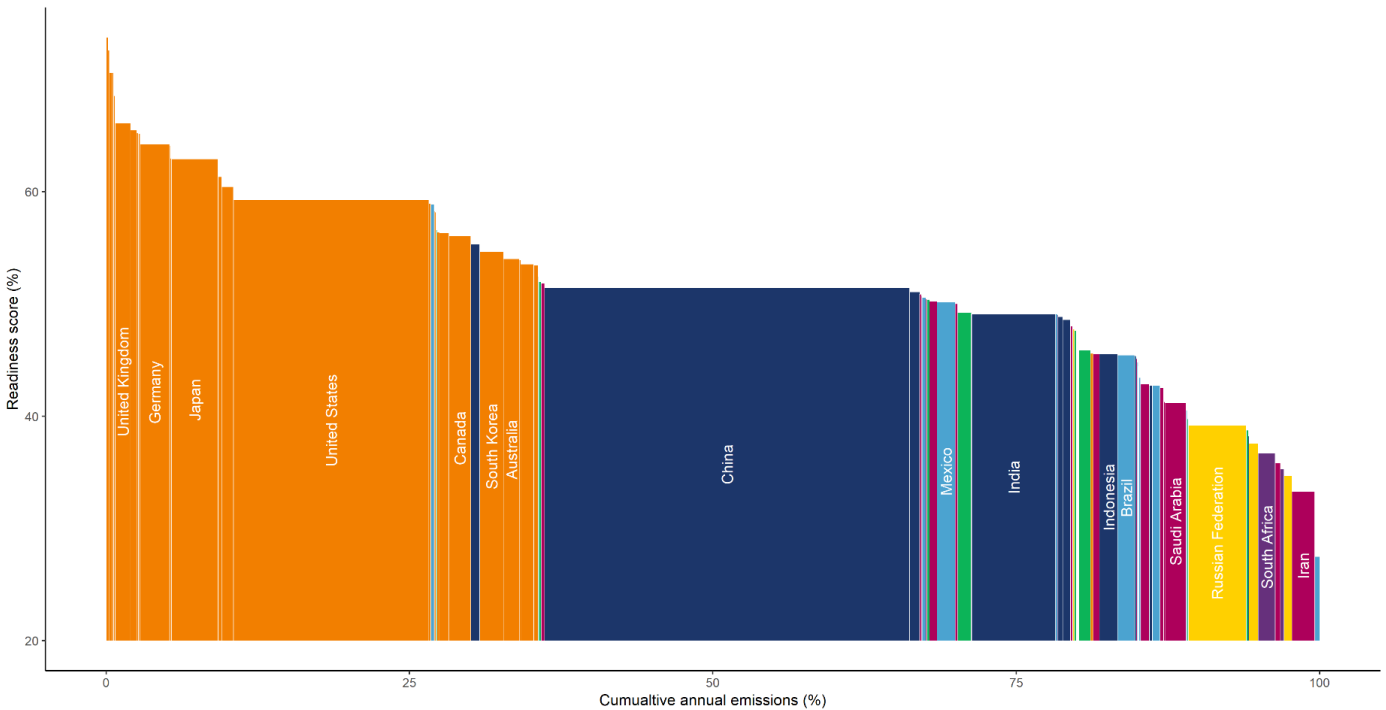
Insight # 3– Top performers



11% of total GDP, 5% of global primary energy supply, 2.6% of global population

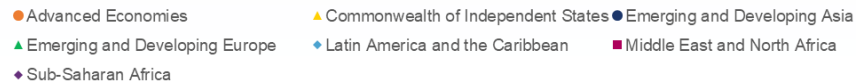
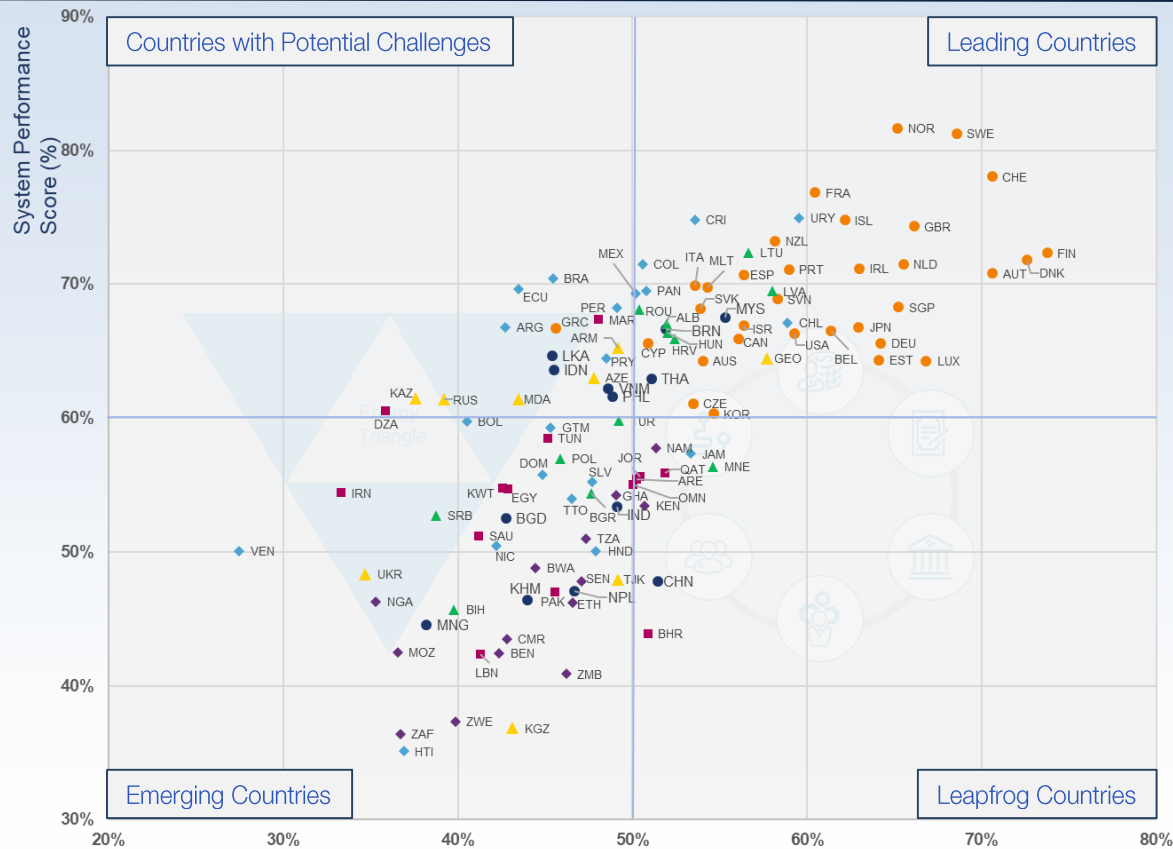
Insight # 4: Transition Readiness Scores (2019) vs. Annual Emissions

- Countries ranking high on transition readiness contribute less to CO₂ emissions from fuel combustion.
- Large economies lagging behind on readiness



Insight # 5: Performance / Readiness Matrix

- System Performance and Transition Readiness are positively correlated
- China, Kenya, Namibia in “Leapfrog” category; indicating positive trajectory





Outreach and engagement

Outreach : Multi-channel media outreach

Dedicated online repository: 27,000 page views



Report PDF: 8,500 downloads



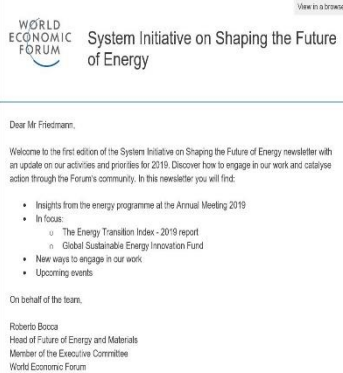
Blogs on Forum Agenda: 25,000 views



2.5 Million+ views for social video on Facebook, LinkedIn, and Twitter



Word of mouth outreach from influencers in Forum communities and platforms



Newsletter shared with 100+ global energy companies

Outreach: Global and regional media coverage

EFEverde, el periodismo del medio ambiente
La transición energética se estanca en mundo, según el FEM
25 mar. · Internacional



Das verheerende Zeugnis für die deutsche Energiewende
DIE WELT - 24 Mar 2019
Doch der aktuelle Bericht des Weltwirtschaftsforums (WEF) erklärt diesen Eindruck zur Illusion. Er stellt Deutschland ein ermühtendes Zeugnis ...




Transition énergétique : la planète marque le pas
La Tribune.fr - 25 Mar 2019
Transition énergétique : la planète marque le pas ... devenue globalement moins abordable et le mix mondial n'a pas enregistré de progrès en ...



Eurasia Review
World's Energy Transition In Doubt As Progress On Affordability, Sustainability Stalls
Mar 26



electrek
World's energy transition 'in doubt' as progress stalls, World Economic Forum says
Mar 26




GESTIÓN
Transición energética se estanca en el mundo, según el Foro Económico Mundial
25 March 2019

Herald Sun World Economic Forum delivers negative ranking to Australia on power prices and emissions
25 March 2019


RenewEconomy
Australia gets bottom of class on energy transition, as government clings to coal
Mar 26



The Asean Post
ASEAN's energy transition on the right track
Mar 26



Business Standard
India ranks 76th on WEFs global Energy Transition index; Sweden tops list
Mar 25



'Almost no progress': World Economic Forum raises concern ...
www.businessgreen.com - 26 Mar 2019
'Almost no progress': World Economic Forum raises concern over ... to manage the transition from fossil fuels to cleaner energy sources, ranking eighth out ... for a low-carbon shift overall, followed by Switzerland and Norway.



The Telegraph
UK well placed in clean energy race
25 March 2019

BusinessDay
BDlive
SA at the bottom of the pile in transition towards clean energy
25 March 2019

LEDEVOIR
Le Canada à la remorque d'un monde qui fait du surplace
26 March 2019

www.news.cn
新华网
NEWS
www.xinhuanet.com
报告警告全球能源可持续性转型陷入停滞
2019-03-25 22:03:10 来源: 新华网
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全球能源可持续性转型陷入停滞
2019年03月26日09:36 来源: 人民网 - 人民日报
CNR 要闻 财经 军事 体育 产经 文娱 图片 视频 教育 科技 旅游

央广网产经 > 滚动新闻
报告警告全球能源可持续性转型陷入停滞
2019-03-26 07:30:00 来源: 新华网

MENAFN
Egypt ranked 86 out of 115 countries on WEF's ETI 2019
25 March 2019

NATION THAILAND
Thailand rises three places in WEF energy transition index
25 March 2019

The world's energy systems are transforming. Here's how.
Washington Post - 2 Apr 2019
Where do you get your energy — and where will you get it in the future? This week, the World Economic Forum (WEF) helped answer those ...



Engagement: Supporting energy transition at country level

FACT-BASED FRAMEWORK

Create a global index assessing energy transition readiness 

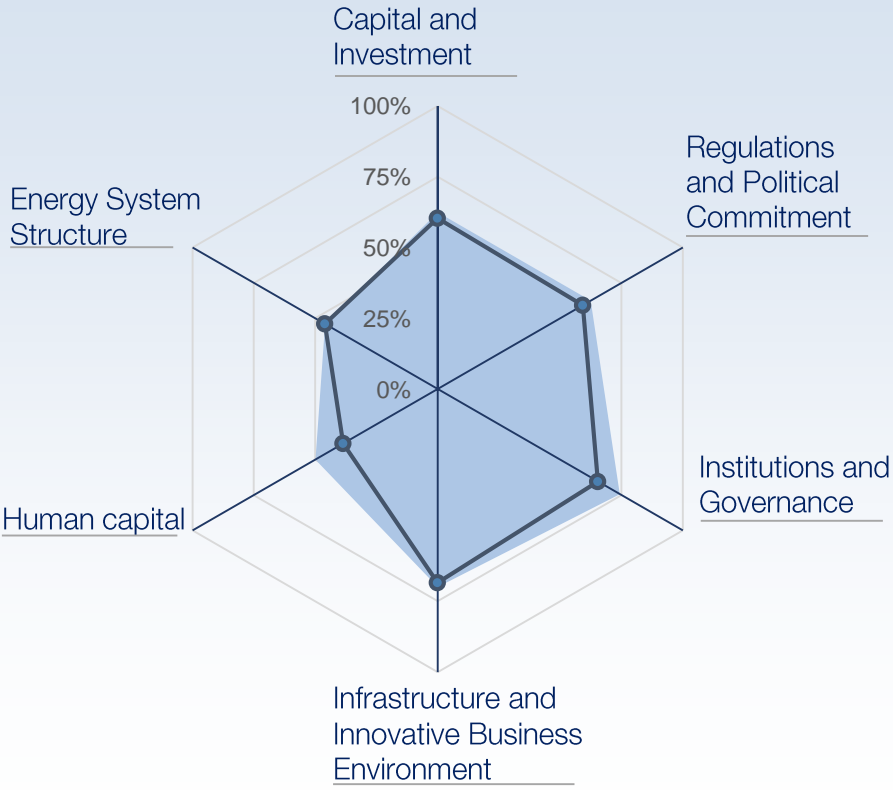
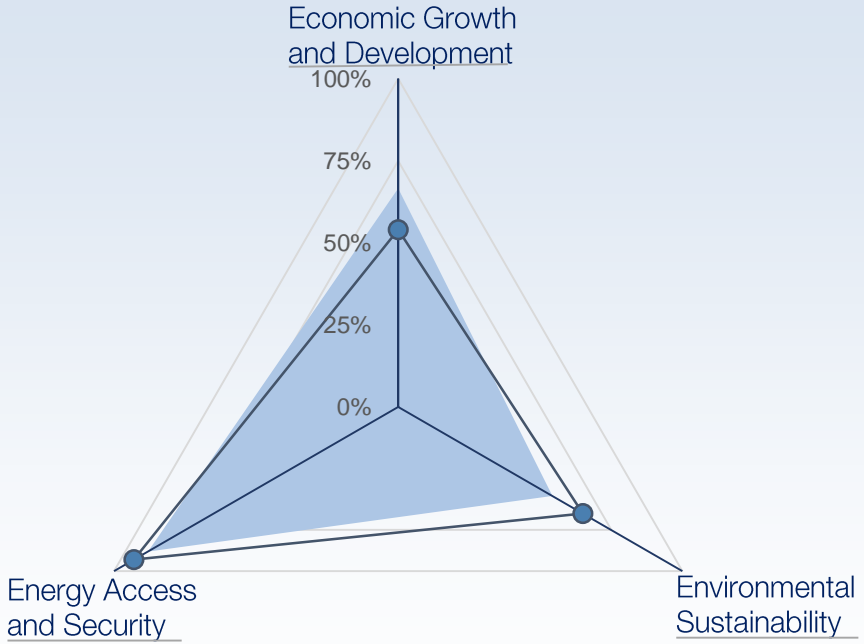
- Define a holistic Energy Transition definition and identify its most important imperatives
- Create a global country benchmark, including
 - Current energy system performance
 - Readiness for the energy transition
- Evaluate performance of individual countries against global targets as well as the performance of their peer countries

INCLUSIVE DIALOGUE

Create multi-stakeholder buy-in to support decision makers to take action 

- Create an ecosystem of decision-makers in the field to create a common understanding of the task and to ensure a holistic approach
- Conduct dialogues to foster public-private partnerships in partner countries with
 - Large impact on the global system
 - Representative challenges
 - Willingness to take action and improve
- Initiate country deep dives and support countries in developing their individual energy transition roadmap

Engagement: Prioritization of country energy system opportunities



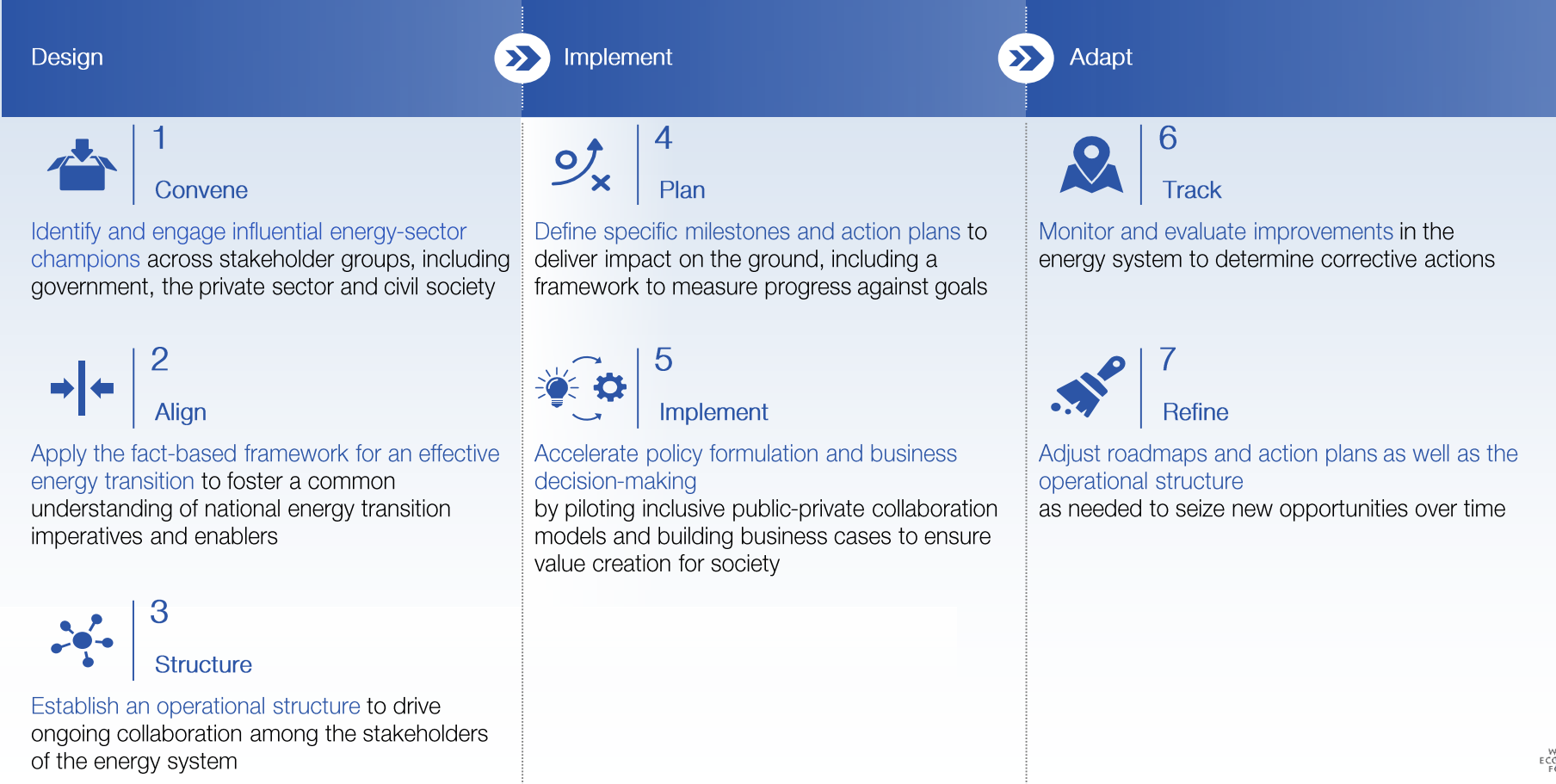
Peer group average scores
 Country X Scores

Engagement: Cross-sectoral stakeholder dialogues

High level engagement through multi-stakeholder dialogues informed by ETI, on gaps, priorities, and stakeholder roles for energy transition in countries across the world.



Engagement: Energy transition roadmaps





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