Sustainable Policies for Sustainable Energy

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Sustainable energy needs sustainable policy. By 2030, the United Nations hopes there will be universal access to modern energy services, a doubling of the share of renewable energy sources in the global energy mix, and a doubling of the global rate of improvement in energy efficiency. These are ambitious goals. But few, if any, countries have figured out the policies and regulations that will foster truly sustainable energy systems which provide the secure, affordable, and clean energy that these goals will require.

Research conducted by the World Energy Council with Oliver Wyman shows that most countries focus on just one of three dimensions of an energy trilemma that exists at the heart of sustainable energy systems. Nearly half (59) of 129 countries ranked by the World Energy Council/Oliver Wyman Energy Sustainability Index rank within the top 25 countries of the world on one dimension. On a comparative basis, their energy is either secure, or affordable, or environmentally sustainable. But only 13 countries perform strongly across two dimensions. Only 5 are leaders across all three (see table).

Policymakers face a challenge in in trying to form policies that will improve their countries' performance across all three of these dimensions, especially since no form of energy is strong on all three. Fossil fuels continue to beat renewable forms of energy in terms of both affordability and reliability. Solar and wind power are much cleaner, but still operate intermittently and continue to be more expensive than conventional energy.

As a result, policymakers struggle to reconcile the often conflicting agendas of the energy trilemma in deciding which forms of energy development and usage to encourage. Energy sustainability targets can also conflict with economic growth goals, complicating the policy development process. Further, radical change in energy supply, such as that unleashed by the technological revolution underway in horizontal drilling, threatens governments' commitment to sustainable energy. As a result of these various challenges, energy policies have been shifting and policy changes have been hard to predict. The resulting uncertainty around energy policy has created a logjam, slowing investment in developing new energy sources, updating aging infrastructure, and building the new plants and networks necessary for a sustainable energy system.

Accelerating the transition to a more sustainable energy infrastructure requires action from both policymakers and energy industry executives. Each is dependent on the other to move forward. Policymakers are looking to the energy industry and institutional investors to take the risks necessary to develop the technology and infrastructure for sustainable energy systems. Meanwhile, energy executives and investors need policymakers to come up with coherent and predictable policies that justify significant investment.

The result of this logjam: energy systems around the world are under significant strain, the demand/supply gap is growing, billions of people may be forced to live without reliable electricity, and economic growth may be put in jeopardy. Today, 1.3 billion people live without access to electricity. This number could increase since global demand is expected to rise by as much as 30 per cent over the next two decades, according to the International Energy Agency.

So how do we ensure that the world's energy systems become more sustainable?

The first step is for policy makers to internalise that "sustainable" energy policy is policy that can accommodate across a wide spectrum of possible futures. Just as we have seen from the pressure exerted by the discovery of massive amounts of relatively inexpensive hydrocarbons in North America, policy needs to be robust across potential changes in the landscape – such as a more plentiful supply of inexpensive fossil fuels (that will challenge the commitment to more expensive clean energy sources) or a prolonged period of economic stagnation. Policymakers and industry leaders should test policy proposals prior to their adoption for their ability to work toward the three dimensions of energy sustainability goals across a variety of possible futures.

This does not mean energy policies need to be static in the face of significant changes. However, it is important for the goals of policy to be consistent and for policy evolution to be predictable, in order to encourage the long-term investments required by investors. Predictable energy policies with respect to taxes, subsidies, public/private investment partnerships and market support mechanisms (such as "green banks") will help to provide a clearer picture of risks and returns, and encourage industry participants and financial investors to make the long-term investments which are required.

At the same time, policymakers should increase the consistency of sustainable energy goals, policies, and priorities across all government departments. Developing sustainable energy systems involves policies not just for the energy sector, but also for transportation, industry, and the environment – almost every aspect of a country's economy. Energy companies and institutional investors must be assured that if a country's energy department encourages them to invest, their assets will not be stranded after a change in transportation policy or environmental regulation.

Finally, political and business leaders need to work more closely with scientists to accelerate research on the development of additional clean energy technologies and practices by encouraging more information sharing globally. Research should also be shared on behavioral response to energy policy changes. Historical evidence shows that changes which lead to higher energy efficiency lead over time, to higher energy usage – a "rebound effect" which offsets the potential gains from actions to increase energy efficiency. For example, after major car companies introduced more energy efficient vehicles in California, driving distance increased, offsetting the savings from fuel efficiency. A fuller understanding of how and why the rebound effect varies across countries could help all policy makers weigh their choices more effectively.

Developing sustainable energy systems is a long-term proposition. Energy systems are made up of many highly interconnected and interdependent parts, most of which have lives measured in decades. After years of focusing policy on one dimension of the energy trilemma , it's very difficult to switch and address the other dimensions. So, it's important to set a course now which is sensitive to all three dimensions.

With clearly defined, sustainable energy policies, countries will be able to attract the investments and technologies necessary to realise sustainable energy systems. Without them, they may remain locked into systems that will be very expensive, and painful, to correct later. ❑

World Energy Council/Oliver Wyman Energy Sustainability Index

Strong performance in the overall index does not necessarily equate to a strong performance across all index dimensions – not one country ranks in the top 10 on all three dimensions.

Rank 2013	Energy Sustainability Index	Energy security	Energy equity	Environmental sustainability
1	**Switzerland** (1)	**Canada** (2)	**United States** (1)	**Switzerland** (1)
2	**Denmark** (5)	Russia (1)	**Canada** (2)	Costa Rica (2)
3	**Sweden** (3)	**Denmark** (5)	**Australia** (3)	Albania (3)
4	Austria (4)	Bolivia (21)	Luxembourg (6)	**Colombia** (4)
5	**United Kingdom** (2)	**Colombia** (6)	France (8)	Uruguay (5)
6	Canada (10)	Kazakhstan (8)	**Switzerland** (4)	**Sweden** (8)
7	Norway (6)	Angola (10)	**Austria** (7)	**Austria** (7)
8	New Zealand (7)	**Qatar** (7)	**United Kingdom** (5)	**Norway** (6)
9	**Spain** (12)	Romania (4)	**Qatar** (11)	**France** (9)
10	France (9)	**Australia** (14)	**Norway** (10)	**Denmark** (19)
11	Germany (8)	**United Kingdom** (3)	Germany (13)	El Salvador (11)
12	Netherlands (13)	**United States** (17)	Saudi Arabia (14)	Gabon (10)
13	Finland (11)	Nigeria (13)	Belgium (15)	Paraguay (13)
14	Australia (16)	Argentina (11)	**Sweden** (21)	Latvia (18)
15	United States (16)	New Zealand (19)	Iceland (12)	Ireland (15)
16	Japan (14)	Czech Republic (16)	**Spain** (24)	Mauritius (17)
17	Belgium (20)	Indonesia (37)	Japan (9)	Brazil (12)
18	Qatar (17)	China (12)	Greece (26)	Panama (14)
19	Luxembourg (18)	**Switzerland** (26)	**Bahrain** (19)	**United Kingdom** (20)
20	Ireland (21)	Slovakia (20)	Oman (16)	Portugal (26)
21	Costa Rica (37)	Peru (9)	Finland (20)	Croatia (21)
22	Slovakia (22)	**Spain** (31)	Taiwan, China (17)	Georgia (30)
23	Portugal (25)	**Bahrain** (40)	Netherlands (22)	**Spain** (23)
24	Colombia (26)	**Sweden** (18)	Hong Kong, China (25)	Italy (22)
25	Slovenia (23)	Ecuador (23)	**Denmark** (34)	Barbados (25)

Ranking for 2012 in brackets ■ *= leader across two dimensions* ■ *= leader across two dimensions*