



2050 Today

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Tipping the scales: identify global tipping points for
policy and technology adoption

Pre-read packet

Background

Several of the key technical and policy solutions to address climate have the potential to reach near-term tipping-points, when market forces can drive rapid global adoption and scaling. For example, policy support in key markets can drive electric vehicle market growth, which decreases cost through learning-by-doing, economies-of-scale, and maturing supply chains. This hastens the day when electric vehicles will outcompete combustion vehicles and can scale to the broader global market. Using tipping points can also apply to policy adoption (e.g., expanding renewable portfolio standards, carbon pricing, etc.), finance, and more. This parallel session will explore how to better identify, understand, and apply these concepts to philanthropic strategies.

Session objectives

1. Define Tipping Points (TPs) with examples including beyond just techno-economic considerations (more sophisticated than unidimensional)
2. Identify and evaluate most relevant TPs for climate mitigation between now and 2050
3. Test existing theories of change against our understanding of TPs
4. Use our understanding to shape more efficient and effective policies, interventions, and overall philanthropic strategy

Holistic Approach to Achieving Tipping Points and Accelerating Low Carbon Energy System Transformation

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Enduring transitions to low carbon energy systems start to occur when several key tipping points are reached. The speed and scale of these transformations is in turn influenced by various acceleration features. Experience with NREL programs around the world has demonstrated the following key major tipping point drivers and acceleration factors.

Tipping Point Drivers

- ***Near (or full) cost parity and adequate market scale***— new and disruptive technologies and practices are at near (or full) cost parity with conventional technologies/practices and markets are at adequate scale to mobilize large amounts of investment. Cost parity tipping points occur in two phases: 1) When new clean energy systems are at cost parity with new conventional systems and are the favored choice for investment to respond to increased demand as is currently the case in most regions of the world and 2) When new clean energy systems are at cost parity with existing conventional systems and lead to retirement of those current systems as is the case in many regions, especially the US, China, Europe, South America, and elsewhere.
- ***Accessible, credible data and analyses to drive decisions*** - broad and open access to reliable and high-resolution data and analyses on clean energy potential, performance and costs, impacts and benefits, systems and markets. This includes such data elements and assessments as 1) High spatial and temporal resolution resource data; 2) Energy system characteristics, bottlenecks, and reliability/resiliency; 3) GIS data and tools on infrastructure, land-use, markets, and clean energy potential; 4) Open data sets on system and technology performance and cost; 5) Future energy transformation scenarios and pathways; 6) Assessments of economic, environmental, and other development impacts of clean energy transitions at local and national levels; 7) Clean energy grid integration and system optimization studies; and 8) Financial and investment data and analysis tools.
- ***Strong political support across key stakeholder groups***— Support of political leaders, a sufficient number of private sector leaders (including major energy consumers), and support across diverse elements of civil society are essential to advance transformational change.

These stakeholders need to be informed of the benefits and opportunities for a clean energy transition and see the value in their own terms.

All three of these tipping points must be reached to be able to advance enduring transformational change and a shortfall in any one element can prevent progress and lasting change. These elements are also mutually reinforcing and interdependent.

Accelerators

Even when a tipping point has been reached, the pace of the transition will largely depend on such enabling or acceleration factors, including:

- ***Vision*** - stakeholders have developed and taken collective ownership of a compelling vision, (including clear goals, local benefits, and pathways) to champion the clean energy transformation
- ***Markets and Policies*** – political leaders, governments, and other stakeholders have committed to and are enacting the necessary reforms in market structures, and enabling policies and regulations
- ***Infrastructure*** – investments are being made in strengthening, retooling and integrating, as appropriate, intelligent energy infrastructure (T&D, grid management, transportation systems, building design, etc.) to achieve the vision
- ***Human capacity*** – sufficient resources are dedicated to building technical capacity of energy system operators and facility managers, businesses, and planners and regulators along with longer-term workforce development for the next cadre of clean energy leaders
- ***Financing*** – robust windows are available for local bank financing along with government risk reduction instruments and active presence of private sector investors

Implications for Philanthropy

Philanthropic and other interventions to advance clean energy transitions will be most effective when they apply a holistic approach that addresses each of the three tipping point factors while also ramping up investment over time in the accelerators to achieve change at speed and scale. Interventions will thus maximize success when they incorporate the following in their approach:

- Obtain a thorough understanding of the issues related to the key tipping point factors and target interventions in areas where strategic investments can achieve success in overcoming barriers across these tipping point factors
- Understand the landscape related to the accelerator features and be prepared to ramp up investments in these elements over time to ensure that not only are tipping points reached, but that change occurs at speed and scale
- Build in stage gates (pre-defined steps to review progress and make adjustments) and flexibility to respond to dynamism and uncertainty in the political economy and in market forces and technology evolution so that adjustments in approach are made at key points throughout the project
- Cultivate local champions and partner with multiple institutions inside and outside of government and avoid reliance on just a few individual actors (who may leave or lose power)
- Use multiple channels to gain influence and open up hearts and minds. This includes diversifying beyond typical government and NGO cooperation channels to also apply innovative approaches, such as utility and business peer exchanges with leaders from other countries, and tapping into the power of corporate clean energy purchase commitments to drive markets and engage political interest
- Coordinate support and vision across donors so that resources from the bilateral, multilateral, and foundation donors can be applied in a coherent and impactful way to overcome key barriers to change
- Invest in advancing work by pioneers in key countries and processes for sharing leadership and inspiring replication of the examples set by these early movers