Renewable Energy and Energy Efficiency Policies: Lessons Learned

Toby D. Couture
Founder and Director of Renewable Energy
E3 Analytics: Berlin, Germany

Abidjan, Cote d’Ivoire
March 17 2014
BRIEF PROFILE:

Toby Couture is Founder and Director of Renewable Energy at E3 Analytics, an international renewable energy consultancy based in Berlin. He has worked with over thirty (30) governments around the world on the economic, financial, and policy aspects of renewable energy deployment, as well as in training and capacity building, in both developed and developing countries.
Parable of the Zen Master
Context
Sub-Saharan Africa (Population 791 Million) consumes as much electricity annual as New York State (Population: 19.5 Million): IEA 2010
Why Renewables and Efficiency?
Cost of Diesel Generation in Africa
Factors Driving Interest in RE in Emerging Countries

Figure 4: Cost competitiveness of solar off-grid systems in selected countries. Source: NORPLAN, 2012b

Source: NORPLAN 2013
LCOE of grid-connected solar PV in ECOWAS Region:

USD $0.11/kWh – $0.25/kWh

LCOE of diesel generation:

USD $0.25 - $2.20/kWh
RE Sources “are increasingly the most economic solution for new grid-connected capacity where good resources are available.”

- Adnan Amin, Secretary General of IRENA
RE Policy Mechanisms: An Overview
Overview of Energy Policy Mechanisms

**RPS:**
Target to meet a certain % of the electricity demand with RE sources by a certain date (e.g. 20% by 2020)

**Tendering:**
Competitive process for selecting suppliers to deliver specific blocks of capacity or power to the grid

**Net Metering:**
Allows customers to produce power on-site and export surplus power to the grid

**FITs:**
Offer a cost-based price for generation from RE sources, over a long-term contract (e.g. 10-20 years)

Note: These policy mechanisms are **not** mutually exclusive: → they can be used together
• So far, FITs (while not perfect) have proved most effective at driving *scale*:

• FITs responsible for approximately 50% of global wind power development and over 70% of global solar PV
Best Practices in RE & EE Policy Design
Best Practices in RE Policy

→ Binding, Long-Term RE Targets (e.g. 10-20 years)
→ Cost-based PPAs
→ Guaranteed Purchase (Take or Pay)
→ Priority Dispatch of RES-E
→ Streamlined Interconnection
→ Bankable Cost Recovery Mechanism
→ Low-interest loan facility/credit guarantees/risk insurance
Reducing the Cost of Finance is Critical

If we are truly entering a “Third Industrial Revolution” powered by low carbon growth, it will be critical for it to be based on abundant, readily-available, low-cost finance.

This requires stable, bankable RE policy frameworks.
Best Practices in EE Policy Design
The current system is inefficient.
Understanding Energy Efficiency

Load Growth

GWh

\( t \)

6-9%

1-2%

= $ Billions in Investment
Key Points about EE

- Increasing EE is one of the most abundant, under-tapped, mis-understood, and under-valued energy resources.

- Experience demonstrates that EE costs on average $0.02 - $0.04/kWh of supply based options (Coal or Gas or Renewables):

→ EE also generates *increasing* returns, as the value of saved energy increases.
Key Points about EE

- Energy efficient is different from procuring RE:
  → Driven by thousands of individual decisions and day-to-day choices, and behaviors

  → It is also invisible.

- This makes it much harder to encourage, both from a policy and from a practical perspective
The challenge is how to “procure” or scale-up this low-cost resource
1. **Lead by Example:** Government procurement and target setting

e.g. U.S. FEMP, German Gov’t

**Advanced Energy Design Guidelines:**

[www.ashrae.org/aedg](http://www.ashrae.org/aedg): Guidelines for hospitals, schools, administrative buildings, etc.
2. Phase-out & Substitution Strategies: Phase-out inefficient appliances

E.g. Ghana: refrigerators, lighting, boilers, AC units, etc.
3. Establish an Energy Efficiency Agency: e.g. Vermont (USA), Nova Scotia (Canada)
4. Rebates and “Feebates”: Incentives to encourage the adoption of EE appliances

e.g. Canada, U.S. EU, India
5. **Energy Efficiency Obligations**: Binding % Target to reduce demand by specific amounts (GWh, %, or BTUs) by a specific date:

- e.g. NSW in Australia; EU NEEAPs
6. **Integrated Resource Planning (IRP):** require utilities to incorporate EE comprehensively in energy master plans

*E.g. U.S. States*
7. System Benefit Charges: Surcharge on bills collected to finance EE programs and incentives

E.g. Vermont, USA, Connecticut, Massachusetts, etc.
Best Practices in EE: Policy Options

8. **RFP Model**: E.g. for government buildings

E.g. U.S. FEMP
9. **ESCO Model**: Private energy services company; profit is based on a share of the energy savings

E.g. NY State, California
10. Raising awareness is critical
11. Monitoring and Evaluation in EE is also critical: Rigorously quantifying the energy reductions is also essential to qualify for related benefits (e.g. CO2 credits, CERs, etc.)
Concluding Remarks
Concluding Remarks

Policymakers should consider the *risks* and *vulnerabilities* of different energy development pathways.

→ Resilience matters.
“Do or don’t do. There is no try.”
References:

Global Report on FITs Policy Design (NREL):

http://www.nrel.gov/docs/fy10osti/44849.pdf
References:

UNDP 2013: Derisking Renewable Energy Investment:

Questions?

Toby D. Couture
Founder and Director

E3 Analytics
toby@e3analytics.eu
Select Publications


Select Publications


