INMETRO

NIST
National Institute of Standards and Technology
U.S. Department of Commerce

Assessing the Impacts of Biofuels Standards: Results to Date and Next Steps

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Current Issues, Future Trends
Gaithersburg, USA, November 13-15

What we've learnt so far from the 4th ICBS

- Countries engaging into **policy initiatives** for biofuels: EU / Brazil / USA / Germany
- Growing **demand** for biofuels, the needs of **stakeholders**, R&D activities. Make sure that what we get is what we are demanding for. **How?**
- **Sectors**: automotive, aviation, biochemicals, new biofuels, etc..
- Concerns and **challenges**
- The need of similar **cooperation** as the Task Force in 2007 ('White Paper').

"Biofuels is not just a commodity but an engineering element. It is an integrated part of the quality insurance system. International standardization is the key for success" (Anders Röj)

"Bioethanol enables advanced, high efficiency engine technology" (Robert McCormick)

"The need for standards: short term considerations, for instance" (Dermot Buttle)

Key word: Harmonization

Where are we now?

Standardization Process: what does theory tell us about it?

Standardization affects both innovation and technology diffusion, influences industry structure and thereby helps determine which firms benefit and which do not from technological change. Positive externalities of standards are associated to the perspective of interactive agents, learning effects, benefits for consumers related to the number of agents that utilize it. In the productive side, the standardization of a technology generates increasing returns, referred to the accumulation of knowledge and capabilities and reducing costs. Technology standards are also beneficial for facilitating the interconnection and the formation of wider nets, besides reducing risks faced by consumers of the new technology

(Lundvall, 1992; Cowan and Cowan, 1998; Bassanini and Dosi, 1998; Shapiro and Varian, 1999; Tassey, 2000).

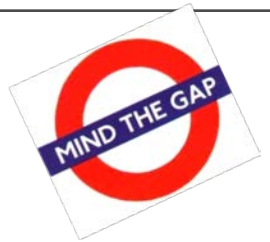
"How could a commodity market exist in the absence of standards? Traders must be able to buy and sell large volumes without even viewing their trades. This is only possible if there is complete confidence about what it is that is being traded. That presumes a clearly defined standard grade, and certification that all produce traded meets that grade". **Swann (1999, p. 14)**

'Window of Opportunity'

(Perez and Soete, 1998)

'Stick and carrot'
(Gregersen, 1992)

The Standardization Process of Biofuels



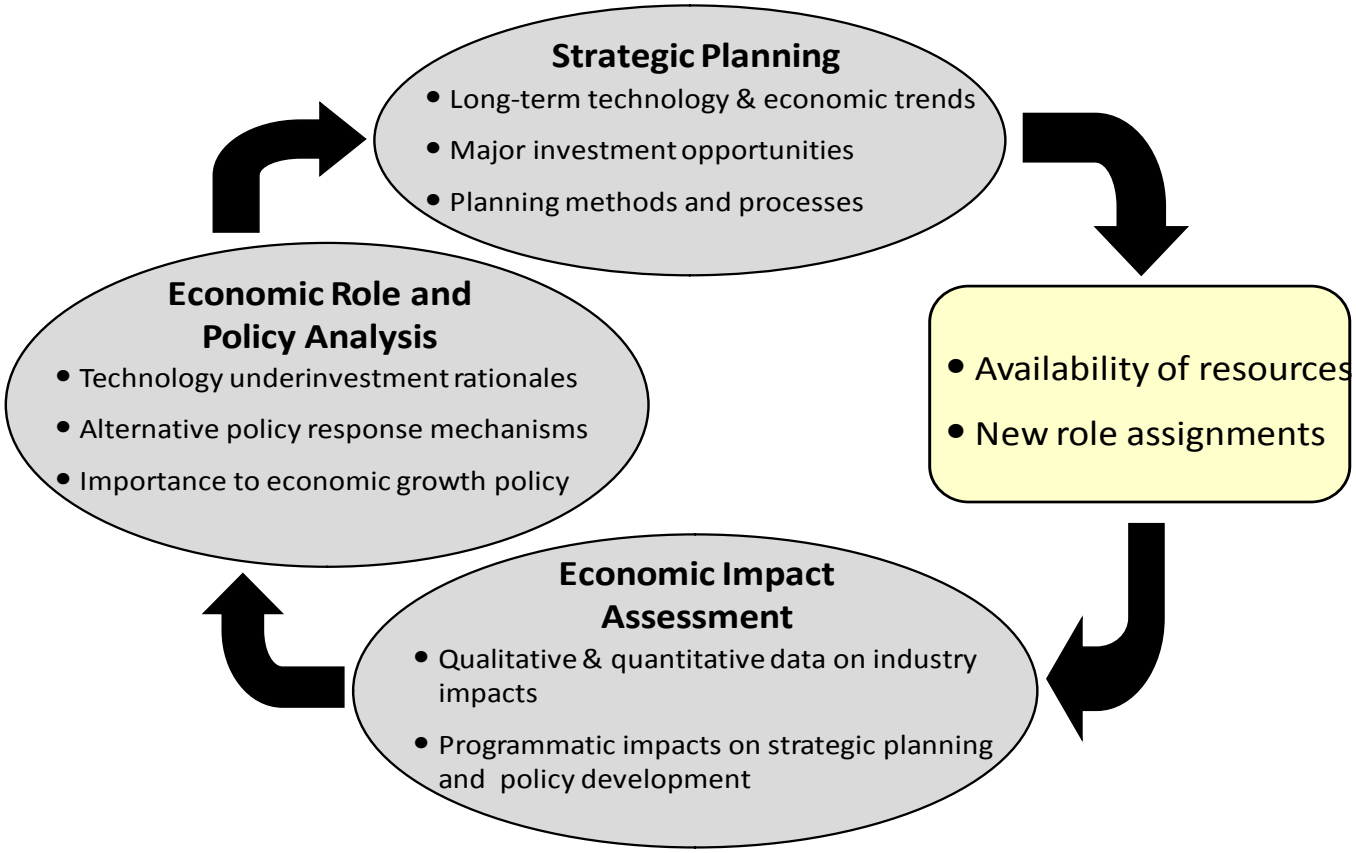
- EURAMET (2009): the most important roles NMIs should play in order to provide the necessary support for the sustainability of biofuels, are as for instance: (i) the development and validation of **measurement methods** for both physical and chemical parameters; (ii) the development of **CRMs**; (iii) the development and validation of **quality indicators**; (iv) the development and validation of metrological methods and systems to determine their **origin**; (v) life cycle assessment (**LCA**).

- UN-Energy (2007): "International **standards** and **certification/assurance** systems are critical to ensure that bioenergy is produced using the most sustainable methods possible";

- IEA (2011): proliferation of standards, increasing the potential for confusion, **inefficiencies in the market** and abuses such as "shopping" for standards that meet particular criteria.

Initial focus of case study : collaboration Inmetro-NIST for the development of CRMs

Why assess the impacts?



Adapted from Tassey (2003)

Impact assessment: methodological approach

- Use multidisciplinary consultant teams that include: technologists; industry analysts; economists/financial analysts; survey design specialists
- Apply and adapt conventional techniques of technology assessment and microeconomic/financial analysis
- Metrics selection depends on nature of activity supported portion of technology life cycle studied
- Retrospective X Prospective Study
- Real-time vs. counter-factual analysis

Adapted from Tassey (2003)

Counterfactual

X

Impact assessment: screening process

- Indications that specific impacts on industry can be observed for at least 3 years;
- Technology should not be have been discontinued at least until 3 or 4 years before the beginning of the study;
- Technology must have affected at least one industry (preferably more than one);
- The existence of explicit evidence that the NMI exerted a key role in the process that hypothetically is assumed as having promoted the observed impacts;
- Indications that industry supports the role of the NMI and, therefore, is willing to contribute to the study, especially to respond surveys that may be applied

Adapted from Tassey (2003)

Survey

- Basic Demographics
- Intensity/Importance of Biofuels
- Open-ended challenges/gaps to be addressed

Cross-tabs/Correlations of Interest

- Demographics
  - "Multiple hats"
  - Size
- Intensity of Biofuels
  - Overall vs. standards/metrology
  - Conferences (~ 20 in the last 5 years)
  - International Markets
- Challenges/Gaps
  - General importance of standardization/metrology
  - Keys words of remaining gaps/challenges

Quick Takeaways

- Diversity in demographic characteristics
- Bi-modal intensity of resources to standards/metrology
- Strong participation in meetings and conferences
- Consensus growth involving international markets
- “Harmonization”
- Composition vs. performance/functionality

Next steps and Input Needed

- Prioritize the assessment
  - Retrospective
  - Prospective (gap analysis)

- About that counterfactual…
  - Can we hear from someone other than economists/statisticians?
  - The role of new emerging markets

Thank you!

Questions and comments are welcome

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