International Transport Forum

ITF/OECD/JTRC/RD(2013)18

Working group: Assessment of Policies for Long-Term Transition to Sustainable Transport

Summary of the 1st meeting

OECD

1st meeting

Date: 12 – 13 December 2013

Venue: IEA room 2

Participants: 7 WG members, 15 external experts

Reports: Emile Quinet - *Factoring Sustainable Development into Project Appraisal, A French view*, Svante Mandell - *Carbon Emissions and Cost Benefit Analyses*

Experts Presentations: Elizabeth Kopits - *The Social Cost of Carbon: A Primer and Overview of the U.S. Government's SCC Estimates,* Nils Axel Braathen - *Shadow prices on Carbon in Selected Countries*

Case Study Presentations: Hans Nijland - *CO2 in CBAs, the Dutch practice,* Hironori Kato - *Valuation of CO2 Emissions in Cost-benefit Analysis of Transportation Projects: Report from Japan*

Report from Quinet

- The need for a long-term strategy in infrastructure investment
- Uncertainty – systemic risk, which is incorporated in assessment framework through discount rate
- Discount rate: Risk-free rate and risk premium, 4.5%
- Stock effects (including carbon) and flow effects
- Increasing carbon value – 32euros/tCO2 in 2010, 100euros/tCO2 in 2030
- French case (infra project) – total benefits: 58.6 million euros (NPV2010), carbon emission: 6.5 million euros (NPV2010) = 11.1%

Report from Mandell

- Two approaches on carbon value – direct approach and indirect approach
- SCC (Social Cost of Carbon) – the damage from one extra unit of emission, based on IAMs
- Policy induced cost – marginal cost of reaching target, referring to emission tax and trading scheme
- SCC for policy target, Policy induced cost for policy assessment
- Should the value be the same across countries and sectors – yes, as different value results in loss of cost-effectiveness.
- Great public concerns on climate often 'hijack'

Presentation from Kopits

- SCC is a measure of the marginal damage from CO2 emissions, thus represents marginal benefit of abatement.
- Carbon value associated with specific policy target is a measure of marginal cost of abatement, NOT an alternative to SCC.
- Interagency group for consistent SCC used by federal agencies
- Value reflects global damage, not limited to US territory
- 3 discount rate: 2.5%, 3%, 5%; not declining
- Increasing value: $32/tCO2 in 2010, $52 in 2030 (at 3% discount rate)
- Imperfection – catastrophes, monetization, etc

Follow-up from Kopits

- US SCC applies not only regulatory policy, but also other types of policies.
- TIGER (Transport Investment Generating Economic Recovery) – requires CBA for application, providing guidance, using US SCC for climate benefit estimation.
- FRA (Federal Railroad Administration) - requires CBA for high-speed rail grants, using US SCC (no guidance specified).
- NHTSA (National Highway Traffic Safety Administration) – reports the Cash for Clunkers program by using US SCC.

Presentation from Braathen

- International comparison of climate CBA
- Informal study on CBA practice and carbon shadow price in different countries.
- Only a few countries have established common CBA guidelines applied all sectors.
- CBA practice, including carbon price and the discount rate, differs significantly both across countries and within the country.
- Sensitivity test is commonly recommended, but sometimes the values applied are significantly diverse.

Presentation from Nijland

- Decision-making based on CBA – significant difference (46 examples, only 33% positive in CBA, 78% positive in decision-making).
- More than half of small projects are adopted despite the negative outcome in CBA.
- Discount rate (under discussion): 2.5% + risk premium 1.5-3.0% (total 4.0-5.5%)
- Carbon value: abatement cost approach (SCC – uncertainty too high), 10EUR/tCO2(20 % reduction by 2020) – 155EUR/tCO2 (445ppm by 2050), average 78EUR/tCO2

Presentation from Kato

- Government's Manuals of Cost-benefit Analysis for Transportation Projects in Japan
- Social discount rate: 4 percent (based on 10-year JGB)
- Evaluation period: around 50 years
- Carbon value: 10,600 JPY/tC (2006 year value), estimated with damage cost approach
- Sensitivity analysis: 5,300 JPY/tC (50%) – 21,200 JPY/tC (200%)
- Few manuals include the value of CO2 emissions into benefit estimation.
- Climate benefit in transport project is very small.

SOD: Long-term strategy and associated uncertainty

- Transport policy involves large uncertainty – climate assessment requires more (longer-term, global scale, unprecedented).
- What kind of uncertainty?
- Systemic risk/project specific risk, probablised or not, short-term and long-term, cost side and benefit side
- Bottom line: the longer, the more
- Literature on climate impacts - scientific uncertainty and socio-economic uncertainty
- Catastrophic impact – relatively quickly, irreversible transfer, large impact, low probability but high risk

SOD: Discounting long time horizon

- How to incorporate uncertainty?
- Systemic risk affects the discount rate.
- How to adjust the discount rate under uncertainty?
- Ramsey formula: time preference and wealth effect
- Under uncertainty in relation to future growth, declining discount rate is suggested – precautionary effect.
- Risk premium: extra discount rate as higher risks are seen in the return of investment.
- Different practice in different countries
- 'ethical' consideration for intergenerational concerns?
- Large impact on long-term assessment

SOD: Carbon value for CBA

- Climate CBA is problematic with large uncertainty. Carbon value is a focal point.
- What approach should we take?
- SCC (Social Cost of Carbon) – the marginal social cost of CO2 emission, estimated by IAMs (Integrated Assessment Model)
- Concerns: large uncertainty, monetisation
- Abatement cost – the marginal abatement cost to reach a specific CO2 reduction target, sometimes referring to emission tax and trading scheme
- Concerns: "right" political commitment, value in carbon market

SOD: Carbon value for CBA (2)

- Should the value be the same across countries?
- In reality, large difference in carbon values internationally
- Different approaches – direct and indirect
- Direct approach – global level estimation or country specific estimation, difference in models and parameters
- Indirect approach basically leads to different values (unless well-functioning international carbon market exists)
- Should the value be the same in the same country?
- A lack of communication? Strict abatement cost approach?
- The same value leads to cost-effective policy development

SOD: CBA in decision-making

- Does uncertainty (and discount rate) make CBA unreliable?
- Alternatives? CEA (Cost Effective Analysis) type analysis?
- Strong support on CBA – no overreaction to uncertainty, various techniques in CBA
- How much CBA reliable under uncertainty?
- What kind of techniques can we recommend?
- Sensitivity test – how to use?
- Literature: 'Non-probabilistic approach' and 'multi-prior approach'
- Public concerns sometimes 'hijack' the decision from CBA
- Decisions not following CBA results – Dutch case

Remaining questions

Carbon value

- What approach should we take?
- Should the value be the same across countries?
- Should the value be the same in the same country?

Decision-making

- Do we support CBA under the influence of uncertainty?
- Do we recommend specific techniques – discounting, sensitivity test, others?

Uncertainty

- What other uncertainty makes transport policy assessment difficult? Does it require different approach in CBA?