

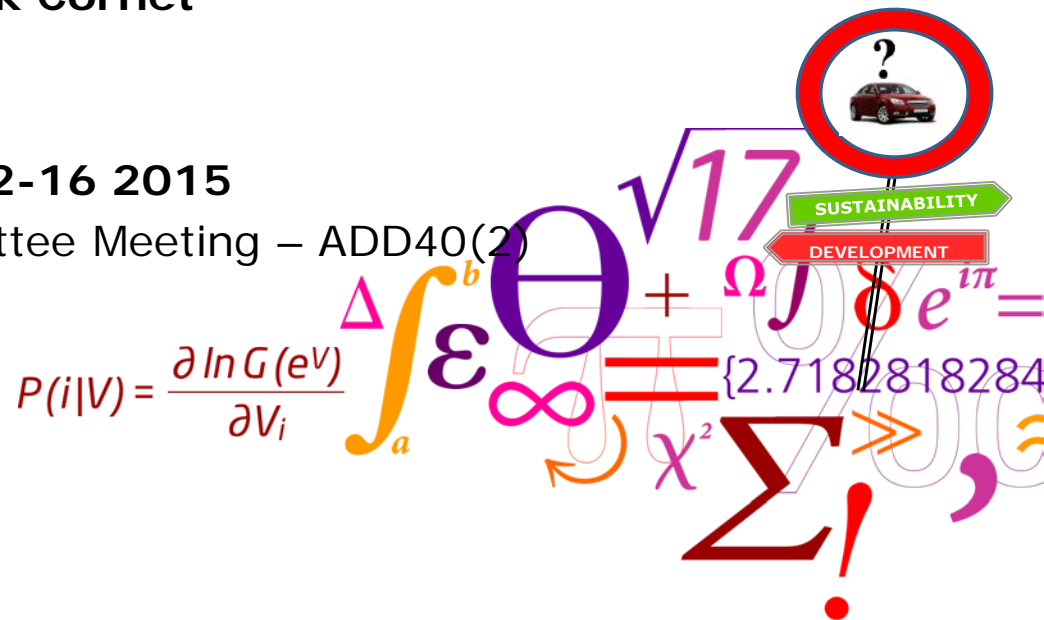
Building A Meta-Framework For Sustainable Transport Indicators

– Implications for Creating a Sustainable Transportation Research Framework

Henrik Gudmundsson & Yannick Cornet
 Technical University of Denmark

TRB Annual Meeting January 12-16 2015

Sustainability Research Subcommittee Meeting – ADD40(2)



Full paper in session 677 Tuesday 3:45

Session 677

Sustainable Transportation Indicators and Measures - From Meta to Local Perspectives

Tuesday, January 13, 2015 3:45PM - 5:30PM *Convention Center, 140B*

Lectern Session | AICP Certification Maintenance Session

Administration and Management

Todd Alexander Litman, Victoria Transport Policy Institute, Canada, presiding

Sponsored By:

Transportation and Sustainability ([ADD40](#))

Building A Meta-Framework For Sustainable Transport Indicators - A Review Of Selected Contributions

Yannick Cornet, Technical University of Denmark

Henrik Gudmundsson, Technical University of Denmark

A GIS-Based Performance Measurement System for Assessing Transportation Sustainability and Community Livability

Qian Wang, State University of New York, Buffalo

Shuai Tang, State University of New York, Buffalo

Jinge Hu, State University of New York, Buffalo

Xiao Chen, State University of New York, Buffalo

Le Wang, State University of New York, Buffalo

Greenhouse Gas Emission Reduction, Economic Benefit and Health Improvement Targets for a Regional Transportation Plan - Santa Cruz County, CA

George Dondero, Santa Cruz County Regional Transportation Commission

Virginia Ann Dykaar, Santa Cruz County Regional Transportation Commission

Peter Hurley, Sustainable Transportation Council

Chris Breiland, Fehr & Peers

Background:

SUSTAIN- Sustainability, institutions and Tools for National Transport Planning

Main partners:



**Copenhagen
Business School**
HANDELSHØJSKOLEN

**International
Contributors:**



User Forum:

Road Directorate
Transport Agency
CONCITO think tank

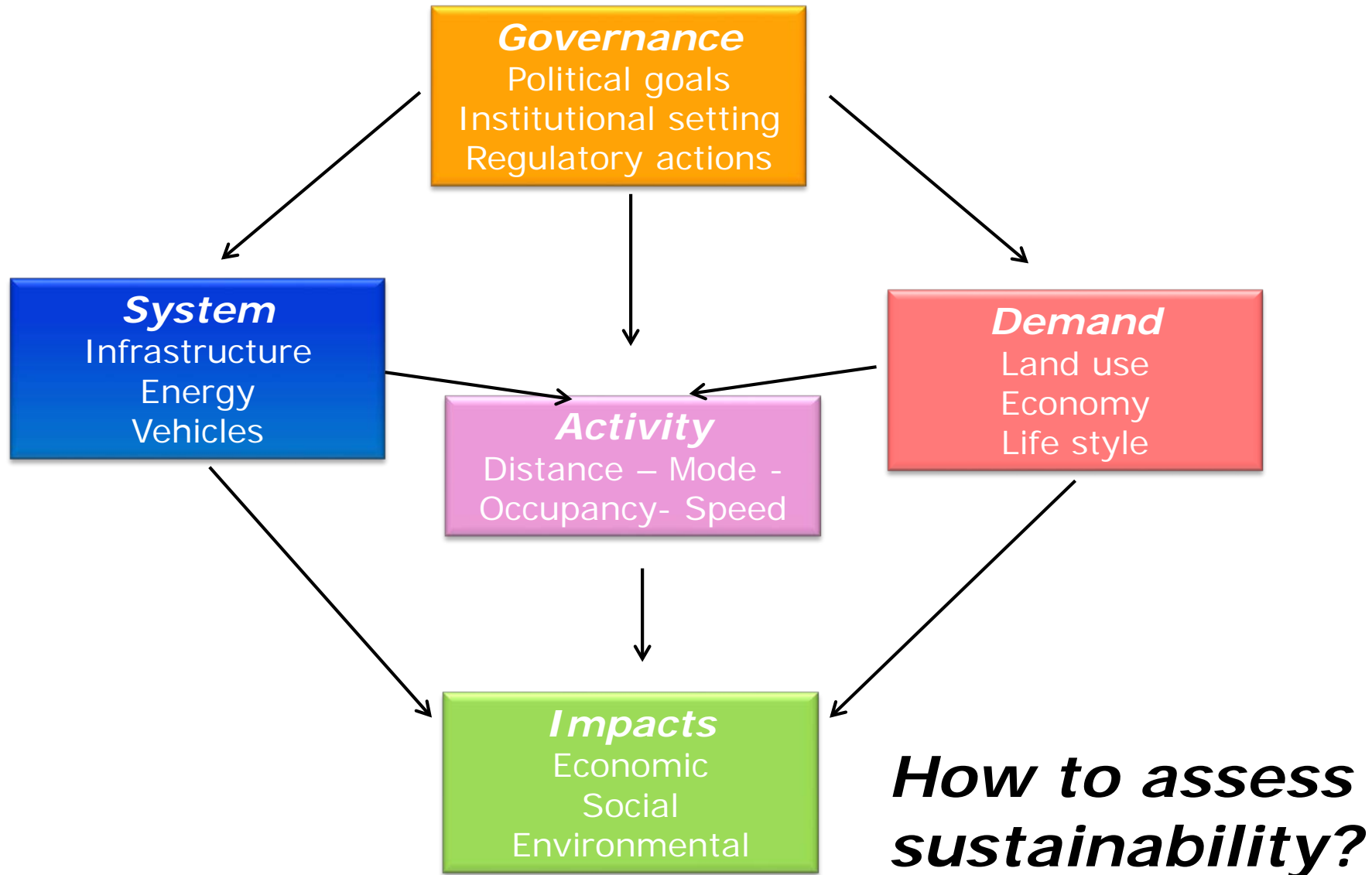
COWI
Øresund Logistics
Trafikanalys, Sweden

Purpose of the SUSTAIN project

- To **study** National Sustainable Transport Planning (NSTP) as it occurs in practice
- To **support** NSTP by contributing knowledge on:
 - Institutional frameworks
 - Indicators,
 - Assessment tools
- To help establish NSTP as an coherent international **research topic** across disciplines



Transport policy monitoring



Why build a meta-framework?

- Sustainability is becoming widely accepted, but context matters for how to address it
- There is no standard for how to measure transportation sustainability
- Need is to understand and guide existing transportation agency practice, not build ideal systems no-one will use
- Rather than 'standard indicators' there could be a **common set of criteria for frameworks**

How did we build the meta-framework?

- Theoretical review to characterize the notion of **frameworks** and their performance functions
- In depth review of key literature on **sustainable transportation** indicator frameworks,
 - To identify most essential characteristics
 - To turn most important characteristics into criteria for developing and critically analysing practice frameworks within each function
 - 19 peer reviewed articles, many in TRR

Performance functions of frameworks

Function:

- **Conceptualization** refers to how a normative and theoretical basis is represented
- **Operationalization** refers to collecting, measuring, analyzing, and reporting procedures
- **Utilization** refers to the strategic application and implementation of knowledge

Rationale:

- **Validity and consistency** with regard to theory and underlying values
- **Realism** with regard to data collection and reporting requirements
- **Relevance** for the governance context in term of goals, responsibilities and influence domains

Criteria identified for sustainable transportation frameworks

- 7 Conceptual
- 6 Operational
- 8 Utilization

- Some criteria are general for indicator frameworks, but many are specific or particularly pertinent for sustainability and transportation

- Some cover two or more functions

Conceptualization criteria

1. Adopting an explicit, comprehensive, and holistic view on sustainability
2. Allowing a long time horizon
3. Integrating land use and transportation on a broad geographic scale
4. Capturing interactions to identify trade-offs
5. Supporting consistency between transportation and sustainability objectives
6. Ranking of sustainability impacts
7. Informing sustainable transport strategies

Operationalization criteria

1. Creating an indicator system logic based on an understanding of linkages
2. Supporting well founded target setting
3. Supporting integrated assessment
4. Ensuring cost- effectiveness of monitoring
5. Making the framing process explicit and transparent
6. Applying indicator selection quality criteria

Utilization criteria

1. Connecting to goals and strategies
2. Integrating vertically
3. Integrates horizontally
4. Engaging with stakeholders and context
5. Communicating externally
6. Aligning with agency capabilities and constraints
7. Leadership for adapting to and enabling change
8. Providing periodic feedback

How to use the meta-framework for research?

- Identify to what extent sustainability aspects are reflected in existing and emerging monitoring, and performance measurement strategies
- Identify to what extent the criteria in the meta-framework are reflected in those practices
- Classify approaches in stages from 'basic' to 'advanced' (such as in NCHRP 750 vol 4)
- Analyze to what extent frameworks drive strategy development and implementation
- Analyze to what extent advanced frameworks explain superior performance or transformative action
- Develop guidance or standard for how to incorporate sustainability in transportation governance

NCHRP 750, Vol. 4, 'Sustainability as an organizing principle for transportation agencies'

Level 0 Policy System—Safe Mobility

Level 1 Policy System—Compliant Transportation

Level 2 Policy System—Green Transportation

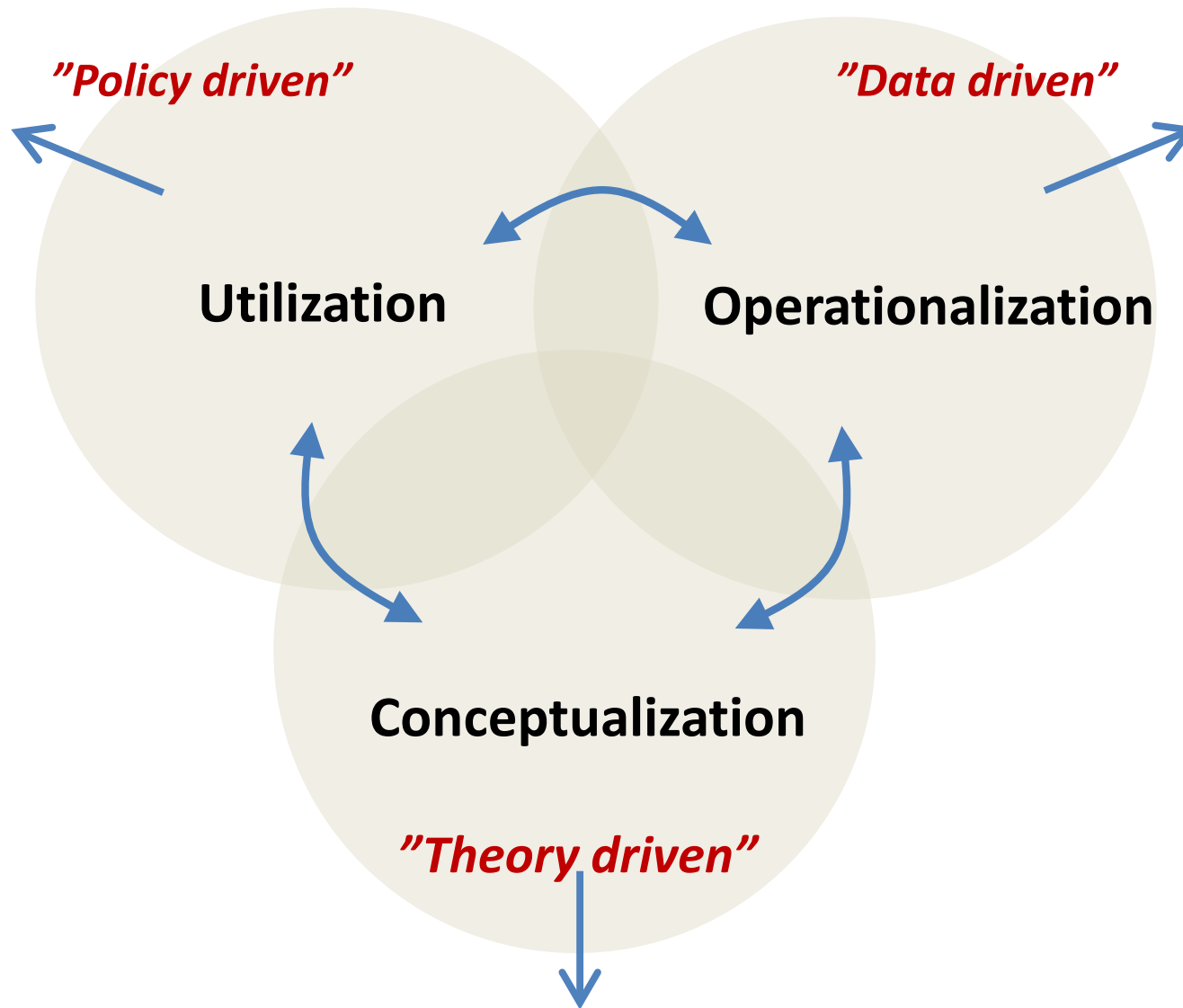
Level 3 Policy System—Sustainable Transportation

Level 4 Policy System—TBL Sustainability

	Sustainability Model Levels				
	0	1	2	3	4
States		←————→			
Leading Localities			←————→		
Leading Non-Use Examples			←————→		
Private Sector		←————→			
Federal Government		←————→			

Implications for Creating a Sustainable Transportation Research Framework?

- Focus on the bigger picture, how things connect or not
- Emphasize the governance aspects
- Look at knowledge tools in a comprehensive perspective from concepts to utilization, and back
- Gauge the distance between principles and practice with a view to context as the explaining factor
- Develop methods and tools to evaluate and classify frameworks and strategies, in addition to 'rating tools' for projects, programs and policies



Words of inspiration

“Sustainable development is above all a **governance** challenge. It is about reforming institutions and social practices to ensure a more environmentally sound and equitable development trajectory”

(Meadowcroft, 2008)