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A functions approach for evaluating transformative innovation policy

Work in progress

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INTRODUCTION

- Innovation policy evaluation lags behind
- Emergence of transformative innovation policy
 - New paradigm?
 - Challenges to evaluation
 - Current frameworks
 - Technological Innovation System functions (Kivimaa & Kern, 2016, Janssen, 2019)
 - Transformational systems failures (Weber & Rohracher, 2012)

INTRODUCTION



Gaps

- Evaluation challenges
- Addition of new functions generating overlaps

Purpose

To enhance the analytical capacity of the TIS functions framework to address the current transformative innovation policy evaluation challenges by:

- 1) highlighting how directionality can be captured within the current functions; and
- 2) complementing the existing functions with a set of non-overlapping niche- and regime-level processes.

THEORETICAL STARTING POINTS (1)

Science, technology and innovation policy evaluation

Policy theory

Program theory



- Innovation theory (Molas-Gallart & Davies, 2006)
 - Market failures
 - Systems failures
 - Input/Output additionality

THEORETICAL STARTING POINTS (2)

Evaluating transformative innovation policy

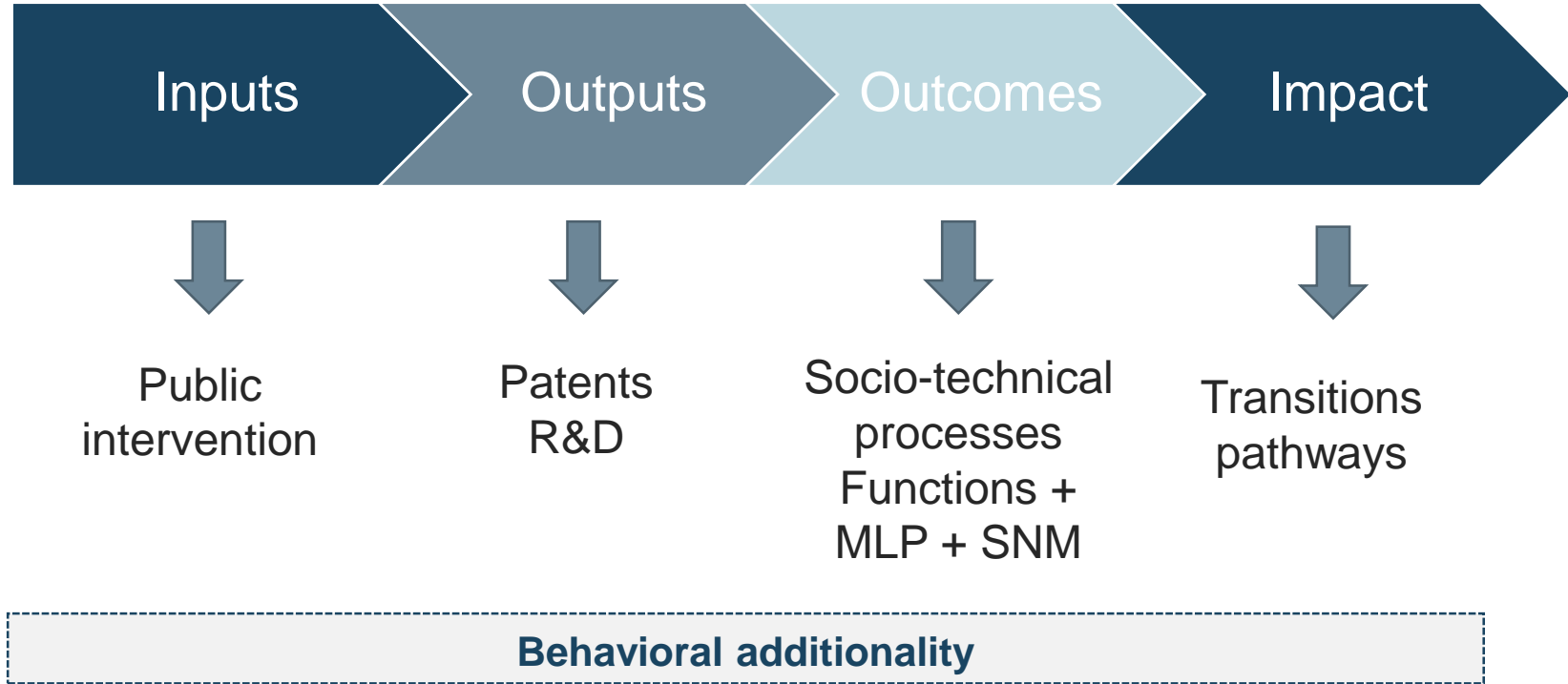
Policy theory

Program theory



- Innovation theory + Transitions theory (?)
- Transformational systems failures (Weber & Rohracher, 2012)
 - Behavioral additionality
 - Directionality

BA + socio-technical change processes



WIDENING THE TECHNOLOGICAL INNOVATION SYSTEM FUNCTIONS

TIS functions

Directionality

Knowledge development and diffusion

Entrepreneurial experimentation

Market formation

Influence on the direction of search

Resources mobilization

Legitimation

Development of positive externalities

WIDENING THE TECHNOLOGICAL INNOVATION SYSTEM FUNCTIONS

Niche and regime processes

Niche processes

- Changes in actor-networks
 - Changes in institutions

Smith and Raven (2012), Raven et al. (2016)

Regime processes

- Changes in actor-networks
 - Changes in institutions

Kern (2012), Kivimaa & Kern (2016), Turnheim & Geels (2013)

NICHE PROCESSES

Changes in actor-networks

- Broadening and deepening of actor-network
- Enrollment of specific types of actors
- Formation on networks and relationships
- Formation of political networks

Changes in institutions

- Articulation of expectations
- Connecting niche innovations (and niche discourses) to existing discourses and narratives
- Development and implementation of new policies
- Development of niche-specific rules
- Adaptation of existing institutions and infrastructures

Source: Kern (2012); Smith & Raven, 2012; Raven et al., 2016

REGIME PROCESSES

Changes in actor-networks

- Entry of new actors into the regime
- Creation of advocacy within the regime
- Incumbents replacement
- Breaking/balancing influence from incumbent actors

Changes in institutions

- Introduction of control policies
- Phase-out established technologies
- Changes in regime rules and regulations
- Changes in values/norms/discourses/perceptions
- New BMs and changes in organizational practices

Source: Kern (2012); Turnheim & Geels (2012); Kivimaa & Kern (2016), Kivimaa et al. (2017)

NEXT STEPS



- Operationalization
- Future empirical applications
- Practitioners' perspective



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Thank you!

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