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Three Framings of Innovation Policy

1. **R&D and Regulation**
2. **National Systems of Innovation**
3. **Transformative Change**

Narrative R&D & Regulation Frame Dominant in 1960s-1980s

- **Market Failure**
- **R&D produces economic growth (driven by productivity growth) & public welfare**
- **R&D leads to competitive advantage (and national prestige)**
- **Markets leads to externalities and need regulation**
- **Emphasis on uncertainty & long term gains**

Focus and Actors Frame 1 R&D and Regulation

Focus

Knowledge Production, R&D, Breakthroughs, High-tech, Novelty

Innovative Actors

Government & Market actors, with a tendency to focus on large firms (and small innovative firms)

Policy Activities Frame 1 R& D and Regulation

- **R&D stimulation (subsidies, tax credits, procurement, mission oriented programs).**
- **IPR regime**
- **Education Policy, with emphasis on Science & Engineering**
- **Science for Society Communication**
- **Foresight & Technology Assessment**

Innovation Model Frame 1 R& D and Regulation

Linear model: Invention (Discovery), Innovation (Commercialisation) and Diffusion (Spreading)

Invention → Innovation → Diffusion

Framework Conditions for R&D and Regulation

- **Strong State**
- **Well-functioning Markets**
- **Social Optimism concerning social value of science and technology & possibilities for solving all problems**

Narrative National Systems of Innovation Frame
Dominant 1990s-today

- **System Failure**
- **R&D & production, use & learning produces economic growth (driven by productivity growth) & public welfare & competitive advantage (and national prestige)**
- **Embedding in National, Regional and Sectoral Systems of Innovation (cluster policies)**
- **Entrepreneurship**
- **Markets are institutions, state needs to shape markets**

Focus and Actors Frame 2 National Systems of Innovation

Focus

Product and process innovation, knowledge Production, R&D, incremental innovation, hidden innovation.

Introduction of idea of path-dependency, technical change is cumulative & collective & focused (directionality)

Innovative Actors

Market actors, but more focus on role of SMEs, entrepreneurs, universities, governments, users, networks, intermediaries

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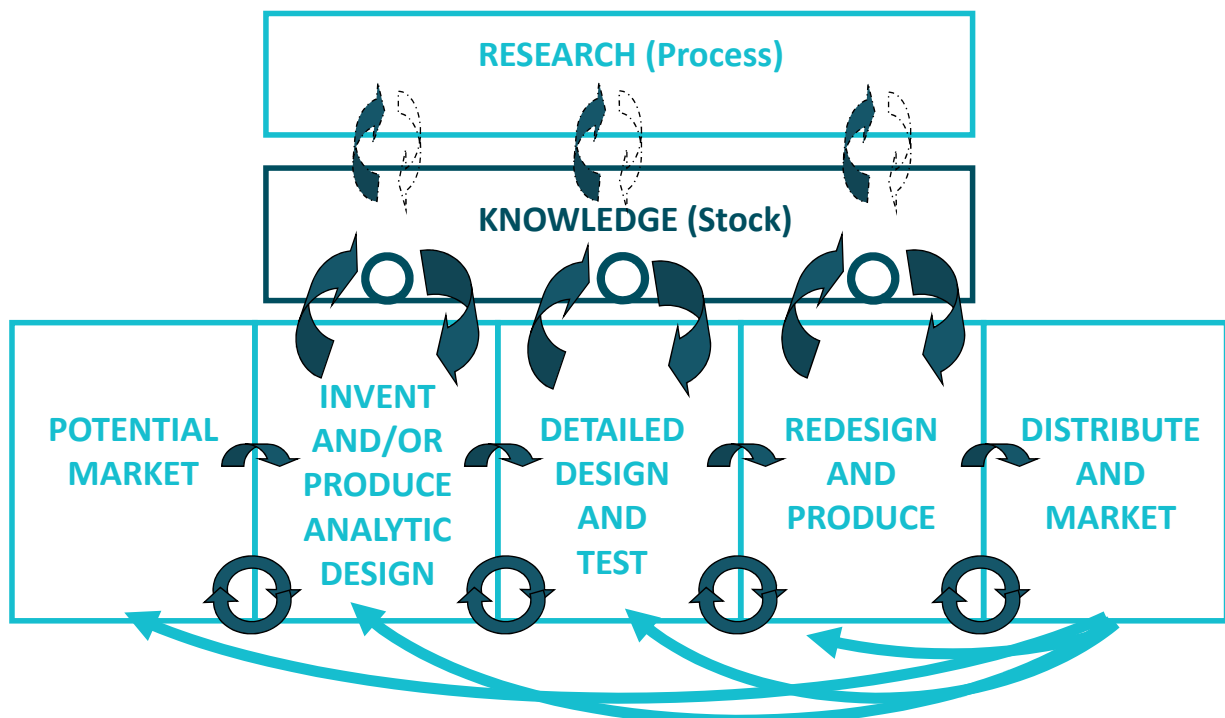# Policy Activities Frame 2 National Systems of Innovation

- Keep focus on R&D stimulation, IPR, Education Policy, Foresight, Regulation (Frame 1) stress importance of variety
- Spaces for interaction on various levels, for example technology platforms
- Building Regional & National System of Innovation
- Ability to absorb knowledge, e.g. capability building, skills development
- Programs to stimulate entrepreneurships, incubators.

Innovation Model Frame 2 National Systems of Innovation

See figure next slide

Chain-Linked Model: Selected elements

RESEARCH (Process)

KNOWLEDGE (Stock)

POTENTIAL MARKET — INVENT AND/OR PRODUCE ANALYTIC DESIGN — DETAILED DESIGN AND TEST — REDESIGN AND PRODUCE — DISTRIBUTE AND MARKET

Kline and Rosenberg (1986)

Framework Conditions Systems of Innovation

- **Strong State (on various levels)**
- **Trust and Social Capital**
- **Social Optimism concerning social value of science and technology & possibilities for solving all problems**

Narrative Frame 3 Transformative Change
Emerging

- **Social and Environmental Needs Failure (inequality and Climate Change)**
- **R&D and Innovation does not automatically lead to human welfare**
- **Need to make distinction between good and bad innovation**
- **Need for Transformative Change/Sustainability Transitions. Regulation is not sufficient for addressing Societal Challenges**

Focus and Actors Frame 3
Transformative Change

Focus

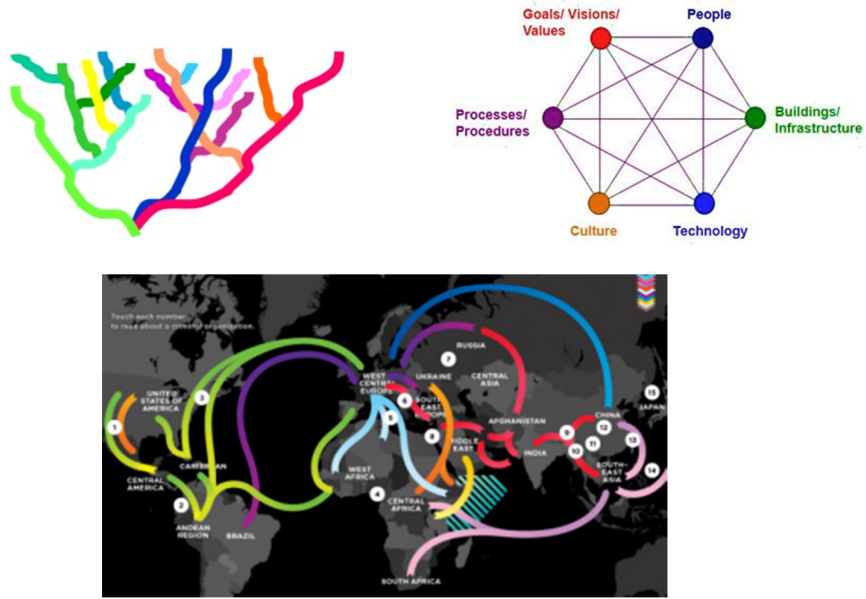**Socio-technical systems and regimes**

Innovative Actors

All actors can be innovative, including user-consumer, marginalized people, civil society. Focus on inclusion, broad social participation, informal economy, grassroots innovation

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Policy Activities Frame 3
Transformative Innovation

- **Generation of More Diversity & Opening up**
- **Experimentation & Scaling-up**
- **Foresight**
- **Constructive Technology Assessment & Responsible Research and Innovation (participation)**
- **Bridge Science/Engineering & Social Sciences and Humanities**
- **New institution, coordination between various policies, integrating of STI into other policies**

Innovation Model Frame 3

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Slide 17

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Claudia Obando Rodriguez, 04/04/2016

Framework Conditions Frame 3 Transformative Change

- **Reflexive Governance**
- **Participatory Democracy and/or ability to navigate political conflict (bring power relationships into the frame)**
- **Need for new culture in which science & technology are not perceived as neutral tools but as political interventions & in which many actors are seen as innovative & less focus on high-tech**

SPRU is hosting a major 50th Anniversary conference 7-9 September on Transforming Innovation

Please join us!!!

More details **www.sussex.ac.uk/spru**