

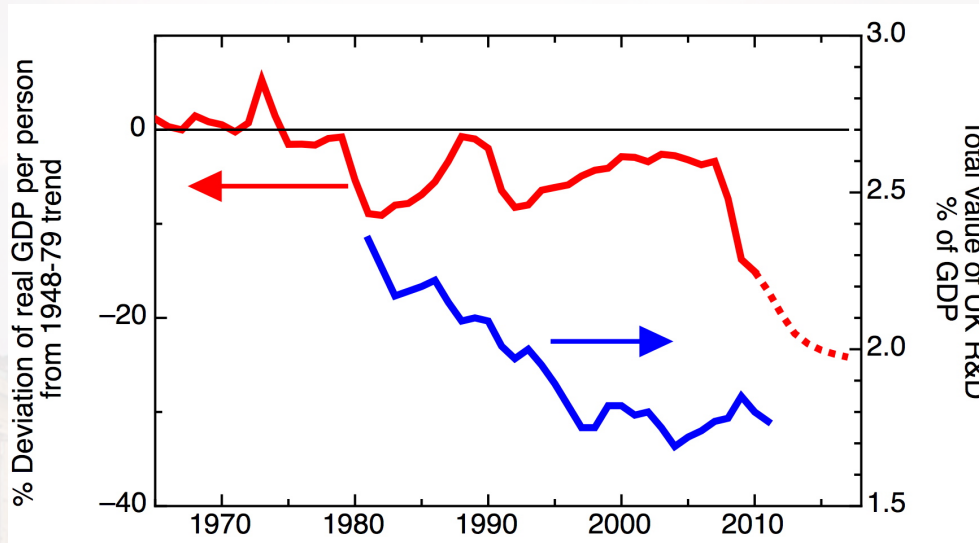
# MAKING MYANMAR THE NEXT ASIAN TIGER



**Webinar on innovation and the STI system**  
Geert van der Veen, Jeroen van der Zalm,  
Erik Arnold, 2020



# Innovation promotes economic growth: limited quantitative evidence, strong qualitative evidence



Source: Richard Jones, 2013



# **Innovation definition**

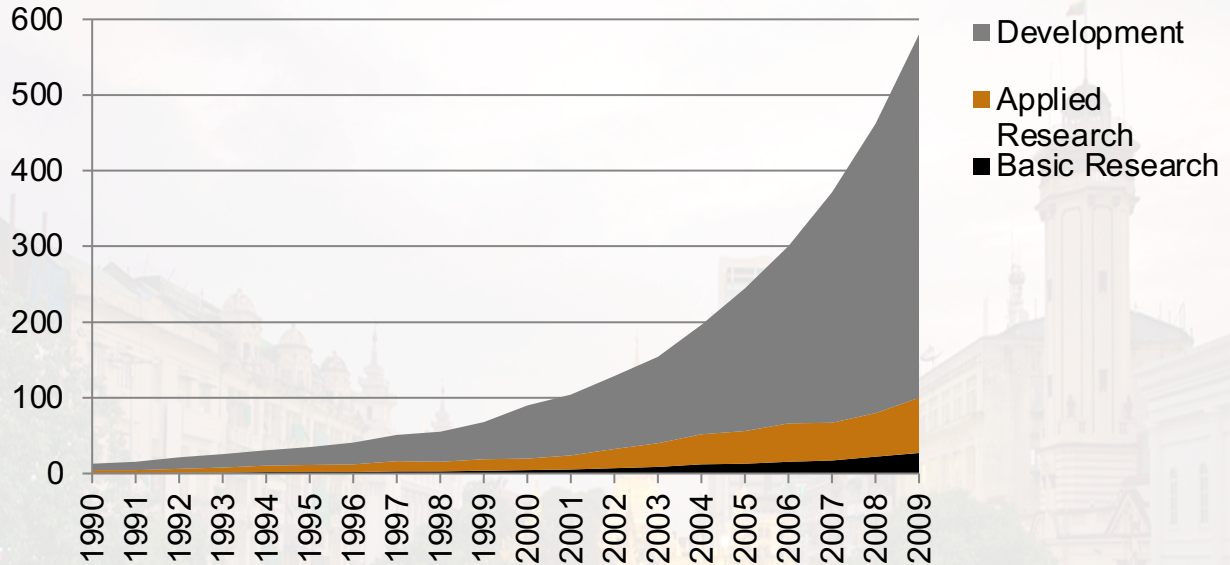
**Innovation  
=  
application of technologies or practices that  
are new to a given society**

# Innovation (1)

- Application: having an idea is not innovation
- Technologies and practices
- Not necessarily new to the world
- **Innovation is not necessarily science based**

You don't need much fundamental research to do catch-up – that all changes when you get to the technology frontier

China: GERD. Basic share constant at 5% (RMB billions)

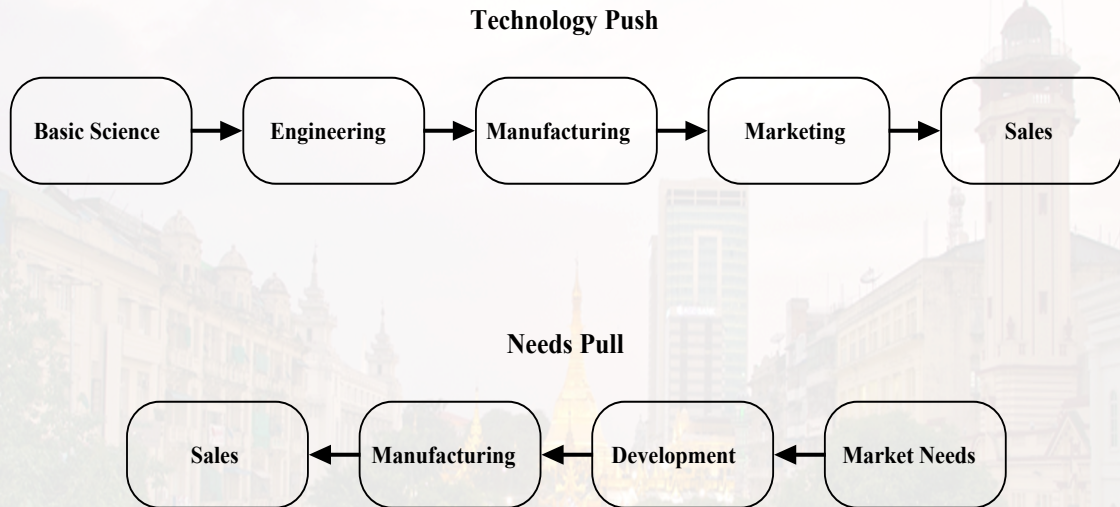




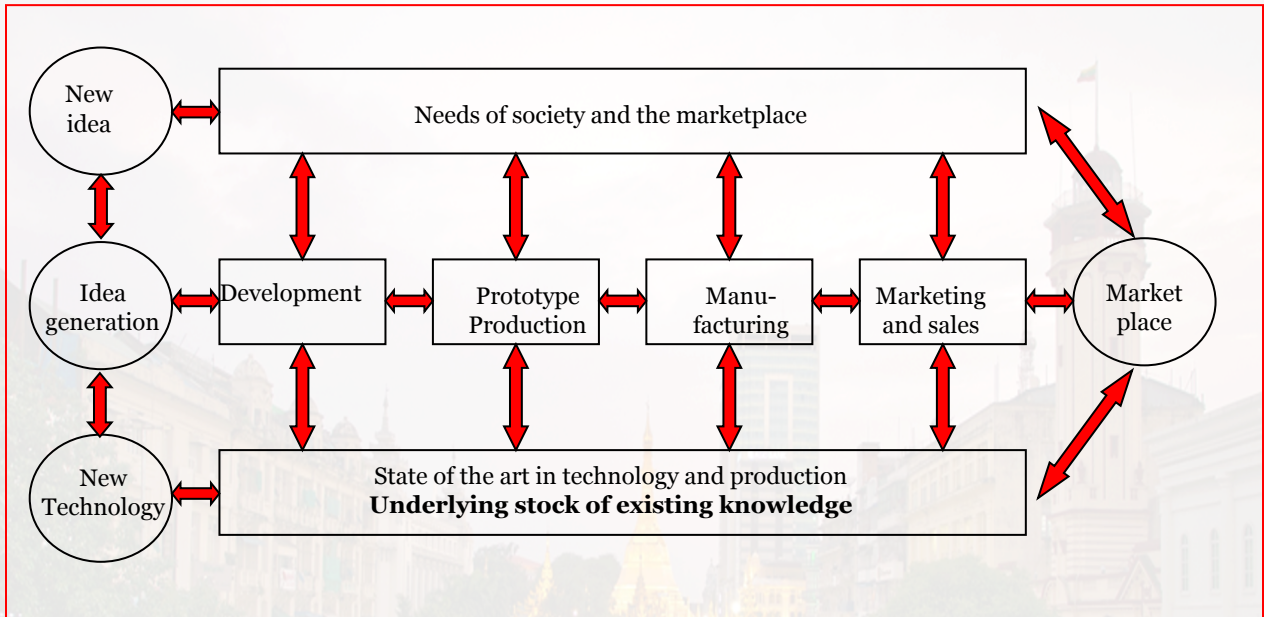
## Innovation (2)

- Incremental vs Radical
- Hightech vs Low-tech
- Entrepreneurs vs Researchers

To understand role of government in research-based innovation we need to drop the linear, new-knowledge-based idea of innovation

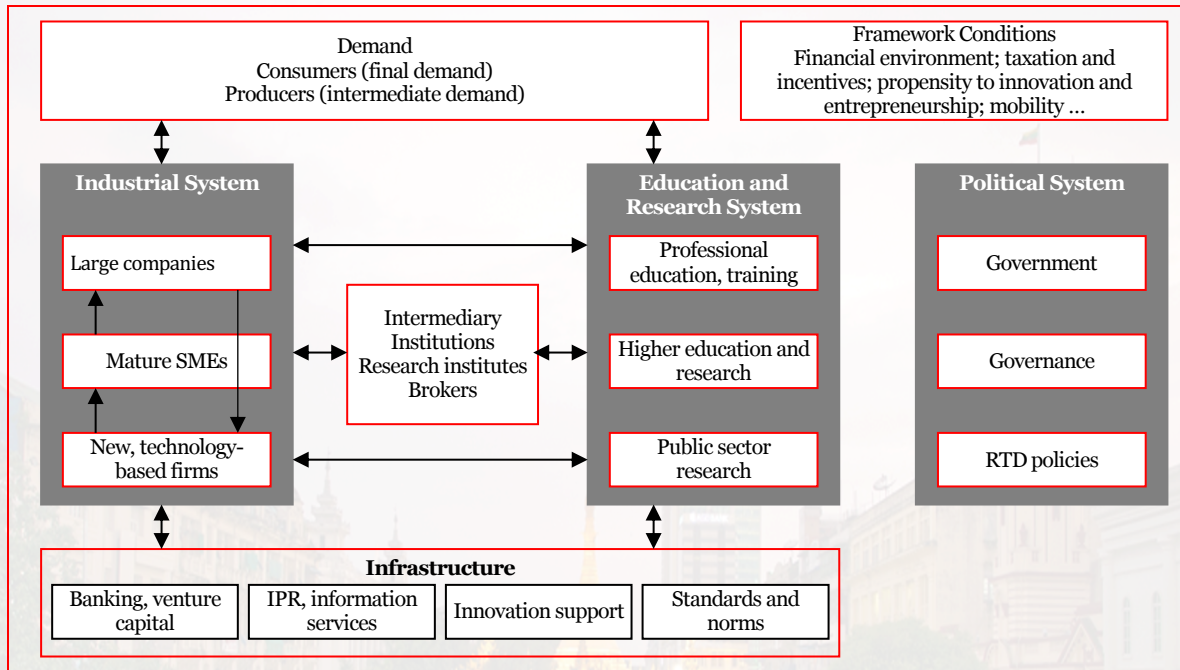


# Linear innovation models have been rejected in favour of more complex, systemic ones





# The complexity of innovation drives us to think in terms of National Innovation Systems



# The NIS perspective has important implications

- Knowledge, learning and institutions are key
- Institutions and their environments are inter-dependent – they co-evolve, so institutions are always context dependent
- In many cases, the relevant unit of analysis is not the individual but networks, clusters and institutions
- Governance and other mechanisms that create systemic cohesion are important
- Key systems issues are **balance** and the **policy mix** we use to achieve it
- But we cannot deal in static optima – we have to understand how to deal with system dynamics, eg in relation to development

# Three generations of 'failure' justifications for intervention

## Market failure - often about basic research

- Indivisibility
- Inappropriability
- Uncertainty

● Nelson, 1959, Arrow, 1962

## Systems failure - mostly about inadequate performance

- Capability
- Institutional
- Network (including lock-in failures)
- Framework

● Smith, Arnold, many others ...

## Transition failure - mostly about inadequate performance

- Directionality
- Demand articulation
- Policy coordination
- Reflexivity

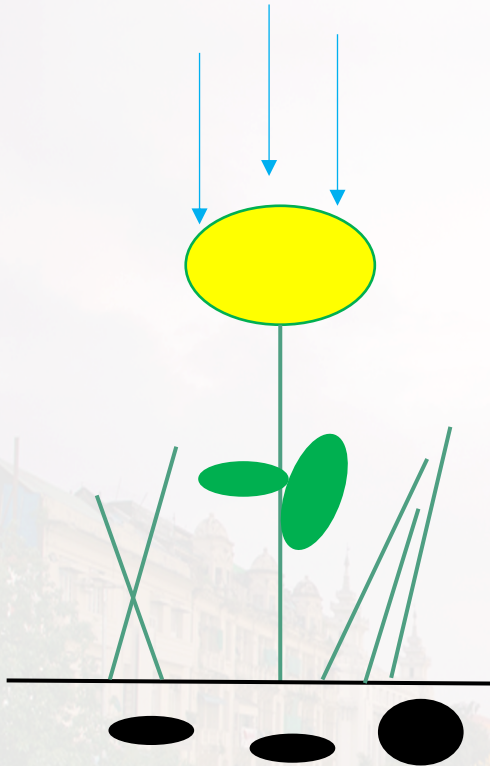
Weber & Rohracher, 2012



# Three generations of innovation system governance – sedimentary layers in institutions and policy

- Post-WW2 ‘blind delegation’ to the scientific community based on the linear model
  - Disconnection of research from innovation
- ‘Science policy’ and eventually ‘innovation systems’. Innovation policy as industry policy
  - Requires a holistic approach with growing focus on coordination across ministries and sectors and on institutional performance
- ‘Societal challenges’ whose resolution requires various degrees of transition between socio-technical systems
  - Engagement of more stakeholders (many from outside the innovation policy sphere) to create consensus about directions of travel and enable implementation

# Gardening parallel (WB, 2008)



Watering (finance, support to innovators)

Removing the weeds (deregulation, competition)

Nurturing the soil (research, information)

Preparing the ground (education)

# Functions needed for successful innovation

1. Entrepreneurial activities
2. Knowledge development
3. Knowledge diffusion through networks, including policy networks
4. Guidance of the search ('directionality')
5. Market formation
6. Resources mobilisation
7. Creation of legitimacy/counteracting resistance to change

(Hekkert et al, 2007)