

What we have learnt from Quantitative Story Telling (QST) at the European Commission?

Sustainable Consumption and production across domains: The 'nexus' as a locus of analysis. International Sustainable Transitions Conference, Manchester, 12th June 2018

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With thanks to the wider Magic-Nexus consortium esp. Mario Giampietro

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Health Warning

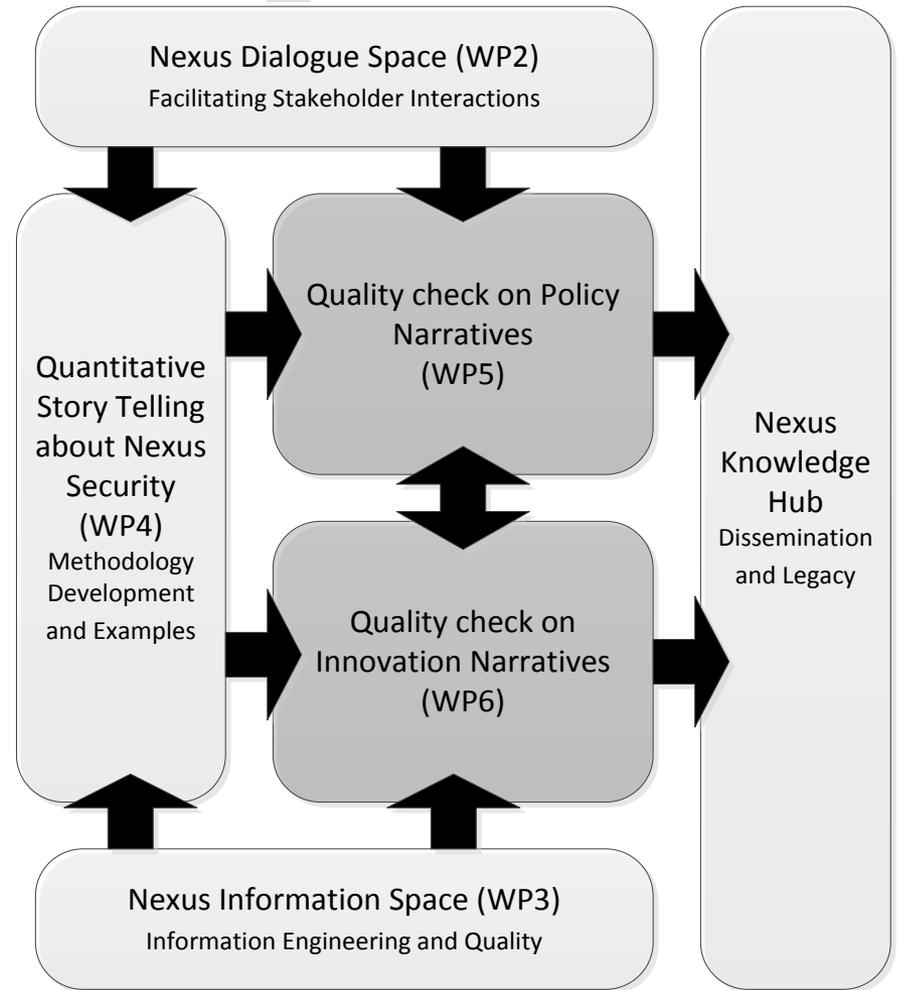
- Not Sustainable Consumption or Production expert
- Not a Quantitative Story Telling expert
- Presenting work-in-progress
- More questions than answers



I have a new address. I am currently living outside my comfort zone.

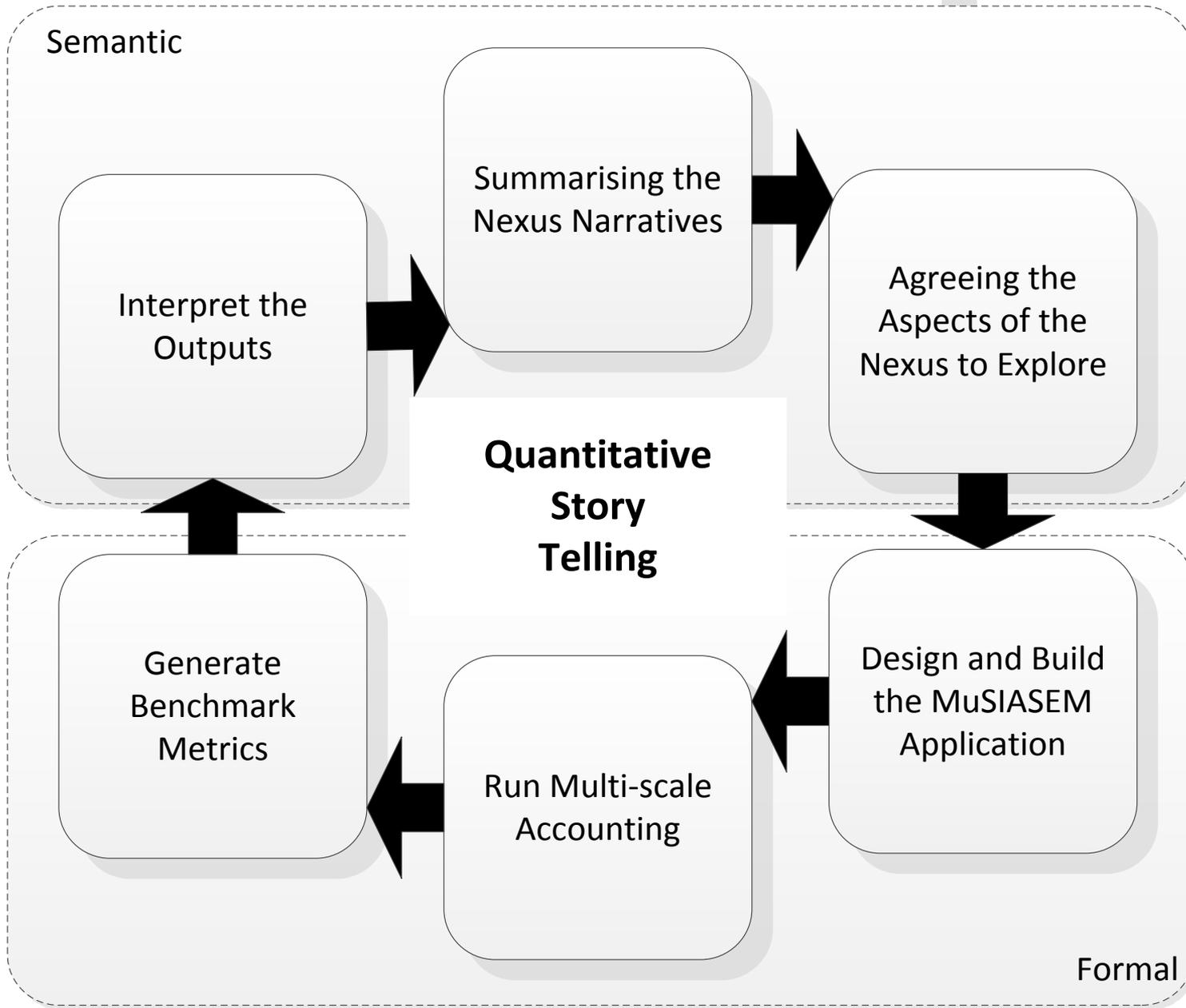
MAGIC - doing things differently?

- Moving Towards Adaptive Governance in Complexity: Informing Nexus Security
- Focus on Water-Energy-Food-Environment Nexus
- Using Post-Normal Science approaches
- Aiming for transdisciplinary research
- Focus on Quantitative **Story Telling** – collective ways of making meaning
- Flexible approach looking at nested systems
- Aspiration for change



MAGIC Conceptual Innovations

- Bio-Economics foundational theory - metabolic pattern of social-ecological systems using fund-flow modelling
 - With some semiotics thrown in for good measure
- MuSIASEM accounting framework:
 - Different types of metabolic flows across levels and scales
 - Allows quantitative comparison of non-equivalent descriptive domains
 - not reduced to monetary units
 - Focus on externalisation - both production factors inside the technosphere and primary sources/sinks in the biosphere
- Quantitative Story Telling
 - Exploring Options
 - feasibility (recognising natural limits),
 - viability (recognising socio-technical constraints) and
 - desirability (recognising social identities, norms and beliefs)



Can be used in diagnostic mode (outcomes of current metabolism) or simulation explore possible alternative metabolic states)

Quality Check not predictions

Applications

Policies

- Renewable Energy Directive
- Circular Economy Strategy
- Natura 2000 Directives
- Common Agricultural Policy
- Water Framework Directive

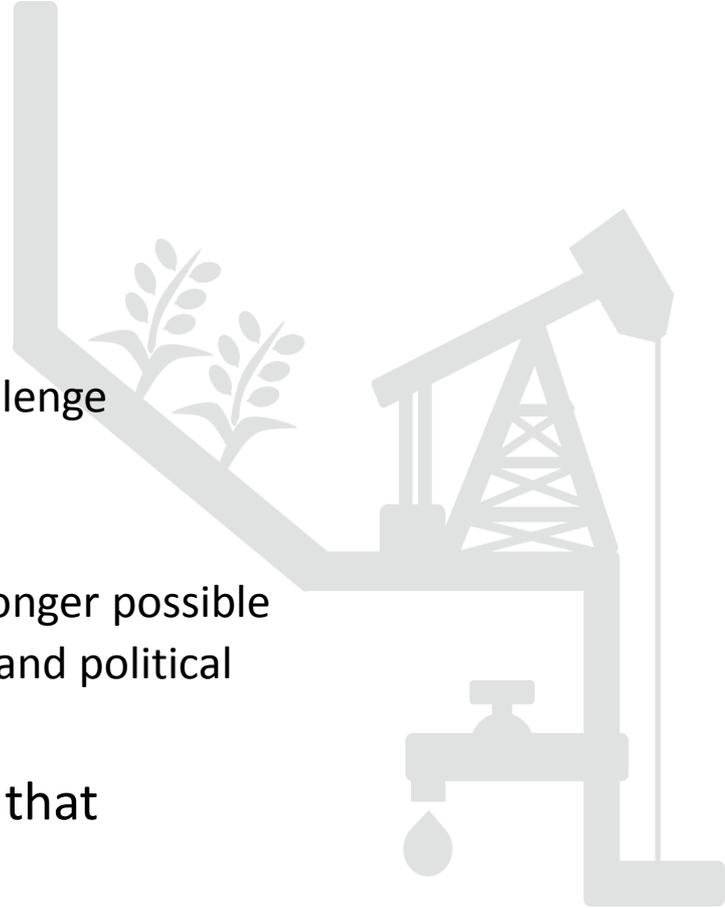


Innovations

- Biofuels
- Environmental protection
- Shale gas extraction
- Green bonds
- Alternative water sources
- Water saving
- Electric vehicles & storage

Findings – Policy Narratives

- Nexus confirmed as multi-dimensional
 - Bio-physical, epistemological or governance challenge
- Need for new metrics
 - “Eye-opening” to prove business as usual is no longer possible
 - But also recognition that evidence use is partial and political
- Challenging consensus - quantified evidence that
 - Circular economy is not circular
 - European “security” dependent on externalising production



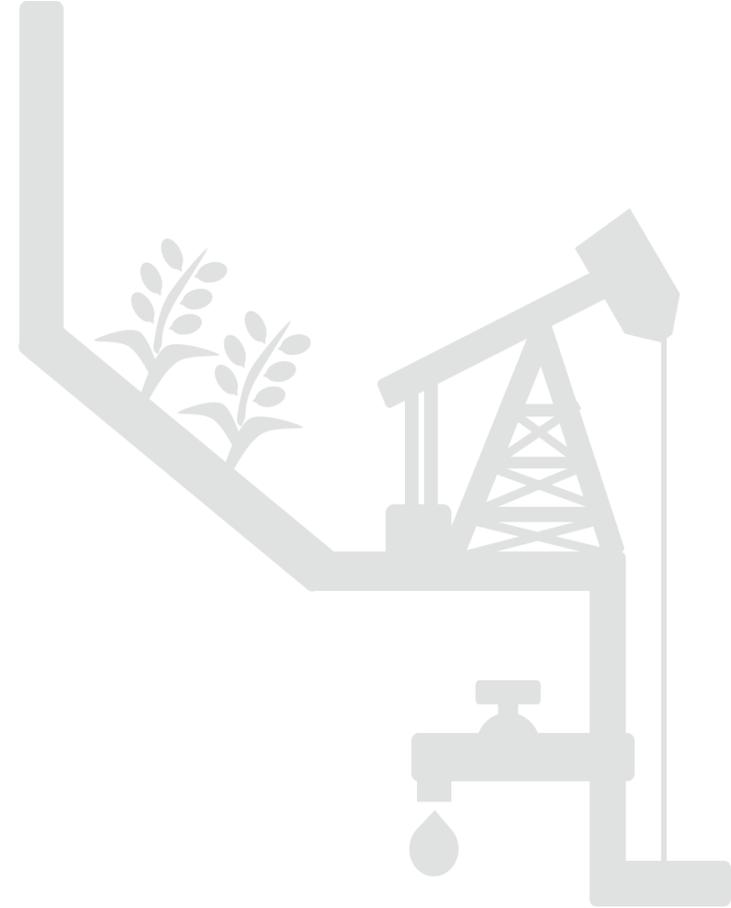
Giampietro M et al. (2018) D4.2: Report on EU socio-ecological systems

Giampietro M et al. (2018) D4.3: Report on exploratory applications of the MuSIASEM

Toolbox in Quantitative Story-Telling

Findings – Policy Narratives

- Nexus is ‘everywhere but nowhere’
 - Recognition of the issues
 - Incompatible with structures and practices
- Niches of opportunities?
 - Inter-Service Consultation Groups
 - Impact Assessments
 - State of Environment Reporting
- Contextual constraints
 - New Commission in 2020
 - Omnibus Regulations & changing role of Council/Parliament



Findings – Methodological Challenges

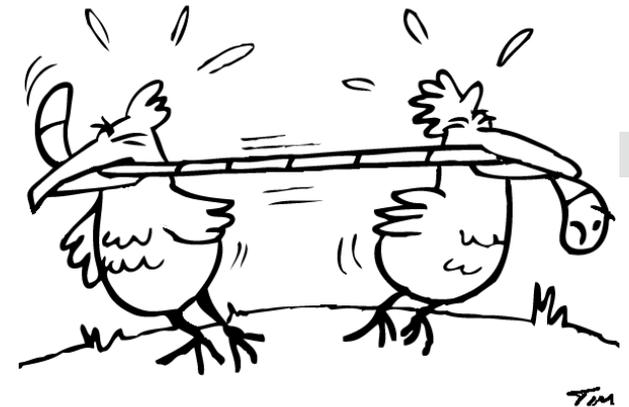
- Flexible framework - handcrafted .v. industrialised tool (delays)
- Availability and management of data at the relevant scales
- Biodiversity – Fund, flow and sink

Dutch End-use matrix
Domestic Consumption

	Plant (kg)	Animal (kg)	Electricity (GJ)	Heat (GJ)	Fuel (GJ)	Blue Water Consumption (m3)	Blue Water Non consumptive Use (m3)	Green Water Consumption (m3)	Human Activity (hr)	Land Use (ha)
Total	2187	548	35	74	39	326	302	62	8760	0.18
Agriculture	26%	11%	7%	8%	3%	6%	0%	91%	0.25%	62%
Manufacturing	32%	0%	29%	26%	3%	76%	0%	0%	1.00%	1.33%
Energy	0%	0%	12%	16%	0%	2%	100%	9%	0.04%	0.21%
Services	12%	2%	32%	20%	52%	2%	0%	0%	6.79%	26%
Household	29%	87%	21%	29%	42%	14%	0%	0%	91%	10%

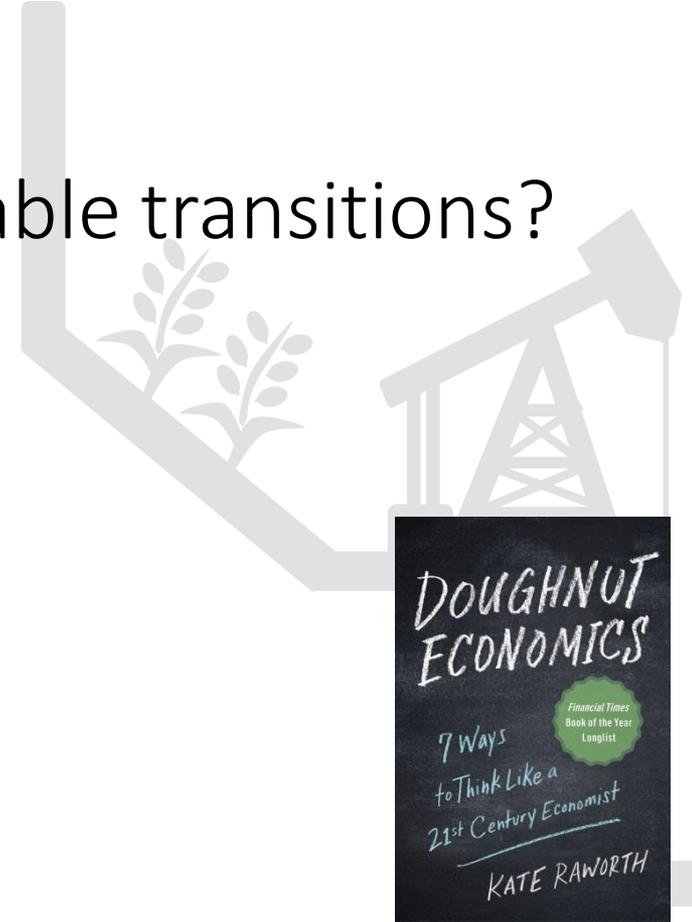
Findings – Methodological Challenges

- Engagement Challenges with EC (with JRC colleagues)
 - Formal and informal routes
 - Piggy-backing .v. bespoke events
 - Self-selecting champions and staff rotation
- Impact on ability to find and use niches
- Epistemological biases
 - Effort (conceptual and resources) between semantic and formal phases
 - Different views on how to analyse desirability



WEFE Nexus: lens for sustainable transitions?

- **Socio-ecological** systems approach
 - Explicit attention to natural capital (biosphere)
- Critique of reductionism
 - Nexus has been critiqued as ‘technocratic’
 - But can be radical and transformative
- Focus on nexus security
 - Neo-liberal justification for status quo
 - Or renewed focus on Raworth’s ‘safe operating space’?
- Complexity challenge
 - Balancing diagnosing problems and experimenting with potential solutions?



Shared Challenges or Shared Solutions?

- Methodological
 - Completing the modelling cycle (more than once)
 - Transdisciplinarity
- Governance
 - Changing things using existing levers
 - Aligning research with policy windows
- Impact on policy or practice
 - Doing it for real
 - Responding to end-users or funders (audit)
- Standing on other people's shoulders
 - Does this community have new lessons for us?



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The present work reflects only the author's view and the Funding Agency can not be held responsible for any use that may be made of the information it contains.

The MAGIC-NEXUS Project

Finding new ways to tackle complex policy issues at the nexus between water, energy and food resources

<http://magic-nexus.eu/>

<https://www.facebook.com/MagicNexusEu/>

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