



# **TEEBAgriFood Writers Workshop**

Cambridge, 13-15 February 2016

Pavan Sukhdev

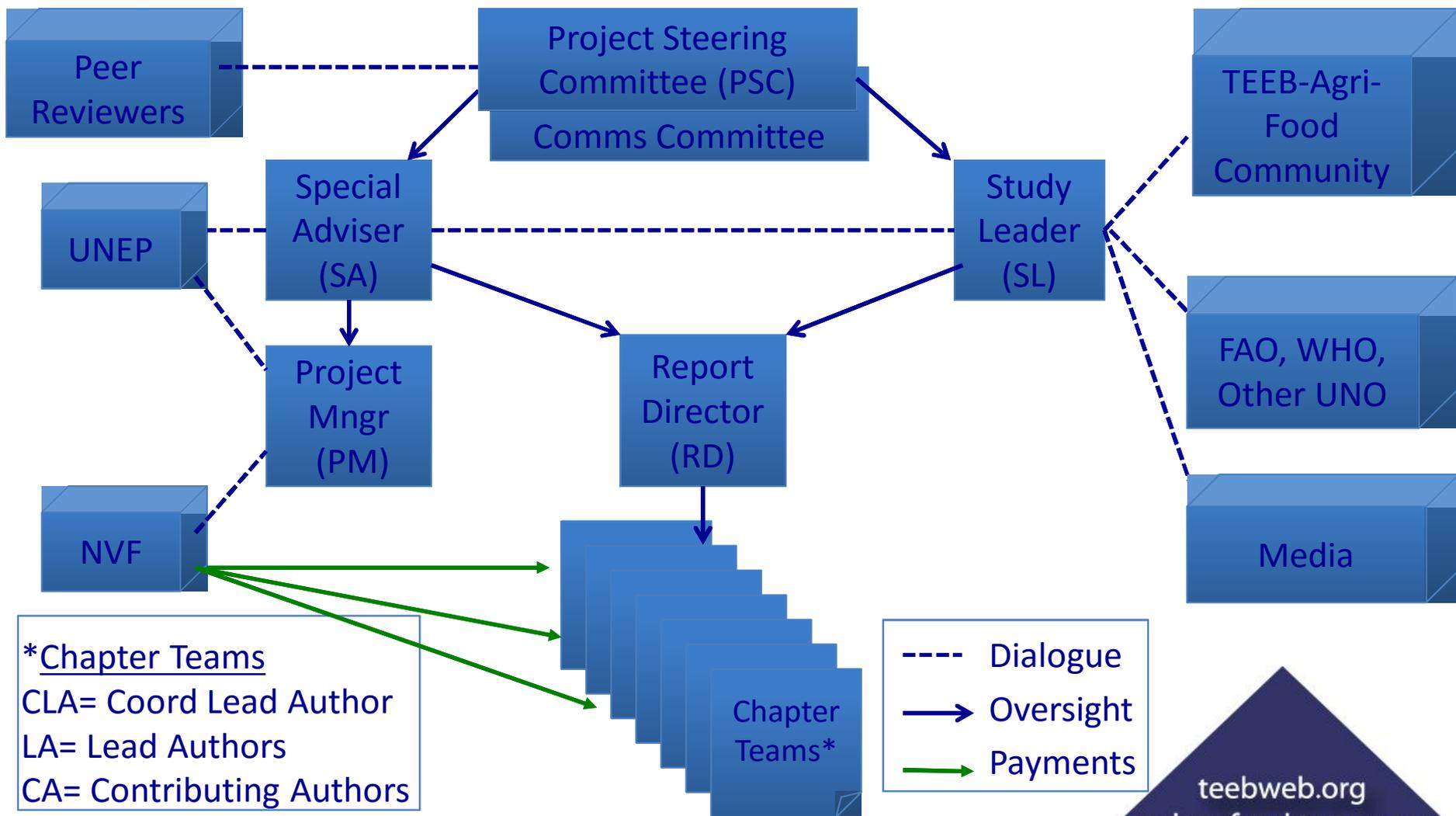


## A Brief History... Events & Activities

- **Dec 2013:** “TCA”/Sustainable Food Trust Conference, London
- **Jan 2014:** TEEBAgriFood Scoping Workshop @ EC, Brussels (DG-DEVCO)
- **April 2014:** Global Alliance Meeting, Palo Alto
- **2014.... :** NORAD Funding; “Feeder Studies”; TEEBAgFood Study Leader
- **May 2015:** Funders Meeting, Milan
- **Aug 2015:** TEEBAgriFood Experts Workshop, Brussels
- **Dec 2015:** “TEEBAgriFood Interim Report”, COP-21, Paris
- **2015.... :** “PSC” formed; GA Funding
- **May 2016:** TEEBAgriFood Writers Workshop, Paris
- **2016.... :** “PSC” Governance; Comms Group; Wireframe; “PMG” formed; GANTT; CFI; CFE; EU Funding
- **Feb 2017:** “Foundations” Writers Workshop
- **2017.... :** Delivering “Foundations” & “Policies”



## Project Structure: Governance & Management





## TEEBAgriFood Foundations : Structure & Flow

1. Background, Rationale, Objectives
2. Related Initiatives & SDGs
3. Overview of Agri-food Systems
4. Food & Nutritional Security, and Health Impacts
5. From Systems Thinking to an Evaluation Framework
6. Evaluation Framework: Elements & Applications
7. Valuation Methodologies, Advances in Modeling & Measurement
8. Using the Framework: Challenges and Examples
9. “Theory of Change”
10. Key Messages



## TEEBAgriFood Foundations, CHAPTER 1

### Background, Rationale and Objectives for 'TEEBAgriFood' and this 'Foundations' Report

- Brief history of TEEB.
- Revisit the TEEB reports and their relevance and application to agri-food systems.
- Document TEEB's evolving mandate - **from** evaluating ecosystems & biodiversity & impacts and dependencies on them of policies, business practices and citizen choices **to** also evaluating adjacent systems with deep & multiple interactions with ecosystems & biodiversity, i.e. the 'eco-agri-food systems complex'
- Outline the dominant discourse on agriculture and food systems versus the ground reality of significant yet unaccounted positive and negative impacts on food security, livelihoods, human health, ecosystem integrity and climate change.
- Socio-economic evaluation as part of a global change agenda for removing poverty, hunger, malnutrition, lifestyle diseases, environmental degradation, and ensuring decent employment on a very large scale.
- The need for transparency, consistency, completeness and a robust scientific and economic underpinning for a holistic and appropriate **evaluation framework** and through that a more responsible and appropriate discourse on food systems.
- Outline the Chapter Structure of "TEEBAgriFood – Foundations"



## TEEBAgriFood Foundations, CHAPTER 2

IN OUTLINE.... comparisons and links to other initiatives e.g. :-

**TEEBAgriFood in  
the context of  
related  
processes and  
the SDGs**

- SEEA; SEEA-Agriculture; Inclusive Wealth / Comprehensive Wealth; WAVES;
- IPBES; SAFA; CICES; IPES-Food (a recent study on health impacts);
- NCC's Natural Capital Protocol; NCC's Food & Beverage Sector Guideline; &
- the Post-2015 Development Agenda, including evaluating Global Goals ( especially # 1, 2, 3, 5, 6, 8, 12, 13, 14 & 15) as key policy entry-points to transition towards an inclusive green economy that delivers these goals



## TEEBAgriFood Foundations, CHAPTER 3

### **“A new global research agenda for food”**

Lawrence Haddad, Corinna Hawkes, Patrick Webb, Sandy Thomas, John Beddington, Jeff Waage & Derek Flynn (Dec 2016), *Nature* , p30-31).

*“The era of commodity research aimed at feeding a starving world is over.”*

### **Ten research priorities**

- 1. Identify entry points for change**
- 2. Make more data on diets widely available**
- 3. Agree on what constitutes a healthy diet**
- 4. Tackle different forms of malnutrition simultaneously**
- 5. Understand the role of chain length**
- 6. Analyse business incentives**
- 7. Account for climate**
- 8. Study supply & demand**
- 9. Identify the economic levers for change**
- 10. Fix metrics**



## TEEB AgriFood Foundations, CHAPTER 3

### Overview of today's agriculture and food systems

Historical and high-level narrative on the influence of food scarcities, evaporating frontiers, declining trade barriers, politics and classical /neo-classical economics on decision-making for agri-food systems

- Diversity of agricultural & food systems in today's world
- Importance of 'value chain' perspective & 'eco-agri-food' systems complex
- Visible & invisible values and impacts of eco-agri-food systems: employment, diets & nutrition, health & disease, climate change, biodiversity loss, culture, community...
- Inadequacy/ inappropriateness of not recognizing and demonstrating the full range of 'capitals' applied in eco-agri-food systems and their values (i.e. impacts and dependencies) in 'eco-agri-food systems' analysis



## TEEBAgriFood Foundations, CHAPTER 4

### “A new global research agenda for food”

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## TEEB AgriFood Foundations, CHAPTER 4

### **“Analysis and valuation of the health and climate change co-benefits of dietary change”**

Springmann, M., Charles, H., Godfray, J., Rayner, M., & Scarborough, P. (2016). *PNAS*, 113

*“A dietary shift towards reduced meat consumption could reduce global mortality by 6–10% and food-related greenhouse gas emissions by 29–70% by 2050”* (15).



## TEEBAgriFood Foundations, CHAPTER 4

### **Farming Systems, Food & Nutritional Security and Human Health**

State of knowledge of linkages and costs of various forms of malnutrition and disease with food and agricultural systems, including antibiotic resistance, zoonotic diseases, lifestyle diseases, and the impacts of endocrine disrupting chemical inputs

- Connecting changes in supply chains and impacts on nutrition
- Defining a “healthy diet”
- Describing the links between healthy diets and food production
- Evaluating the gradual globalization of “western diets” and the roles of culture and diversity



## TEEBAgriFood Foundations, CHAPTER 5

### Systems Thinking for Agri-Food systems, and the need for a Universal and Comprehensive Valuation Framework

- Viewing ecosystems, human systems and agri-food systems as an interconnected whole rather than as independent domains for ‘silo’ analysis.
- Identifying and evaluating spatial, temporal and value-chain parameters and boundaries for our proposed analysis.
- Recognizing and classifying the very different forms, typologies, cultural features & socio-economic contexts of agri-food systems.
- Recognizing and classifying dependencies and impacts of these different systems occurring at different scales (e.g. farm, landscape, watershed) and in varying geographical and geo-political contexts.
- Exploring the implications of systems thinking on the question of what to value and why, i.e., ‘framework’.
- Defining ‘success’ for frameworks, and drawing lessons from other successful evaluation frameworks across diverse contexts (eg: IFRS ; CICES; etc)
- Merits and limitations of a **universal** and **comprehensive** TEEBAgriFood evaluation framework and lexicon as a guide and lens for evaluating eco-agri-food systems, their practices, products, and value chains on humans & nature

## TEEBAgriFood Foundations, CHAPTER 6 Applications of a Universal Evaluation Framework

### (ii) Dietary Comparison

Diet X  
vs  
Diet Y

### (iii) Farm Typology Comparison

System A  
vs  
System B

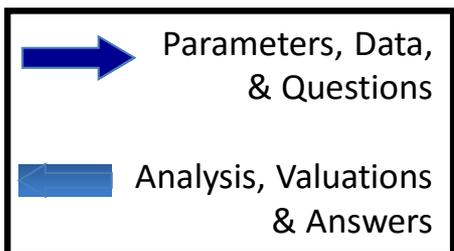
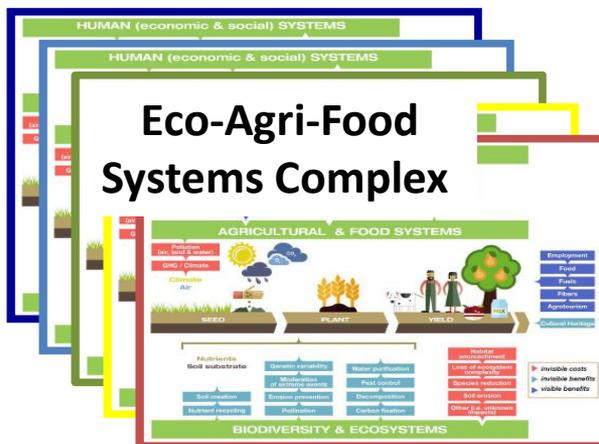
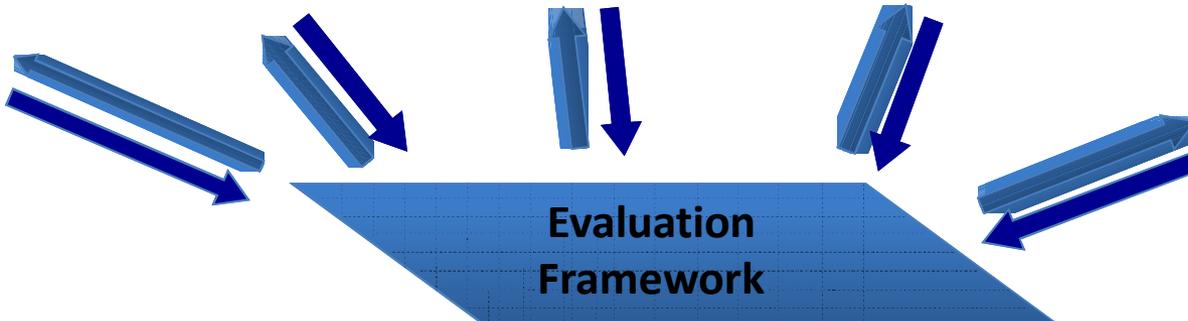
### (iv) Policy Evaluation

Policy Scenario 1  
vs  
Policy Scenario 2

### (i) Business Analysis

Product X  
vs  
Product Y

(v) National Accounting  
Conventional SNA  
vs  
Environmentally Adjusted/ SEEA





## TEEBAgriFood Foundations, CHAPTER 6

Identifying what to evaluate and why, including value components that are

- Economically **visible** - at macro level (i.e. reflected in Systems of National Accounts) or at micro level (i.e. reflected in corporate P&L) as well as
- Economically **invisible** values including several biodiversity and ecosystem services; human health impacts; pollution and waste impacts; climate impacts; cultural identity; etc: Incorporating Externalities

Extending evaluation / multi-criteria analysis beyond economic value addition: considering socially significant factors – employment on small farms, gender and property rights, equity and pricing power

### Elements of the TEEBAgriFood valuation framework

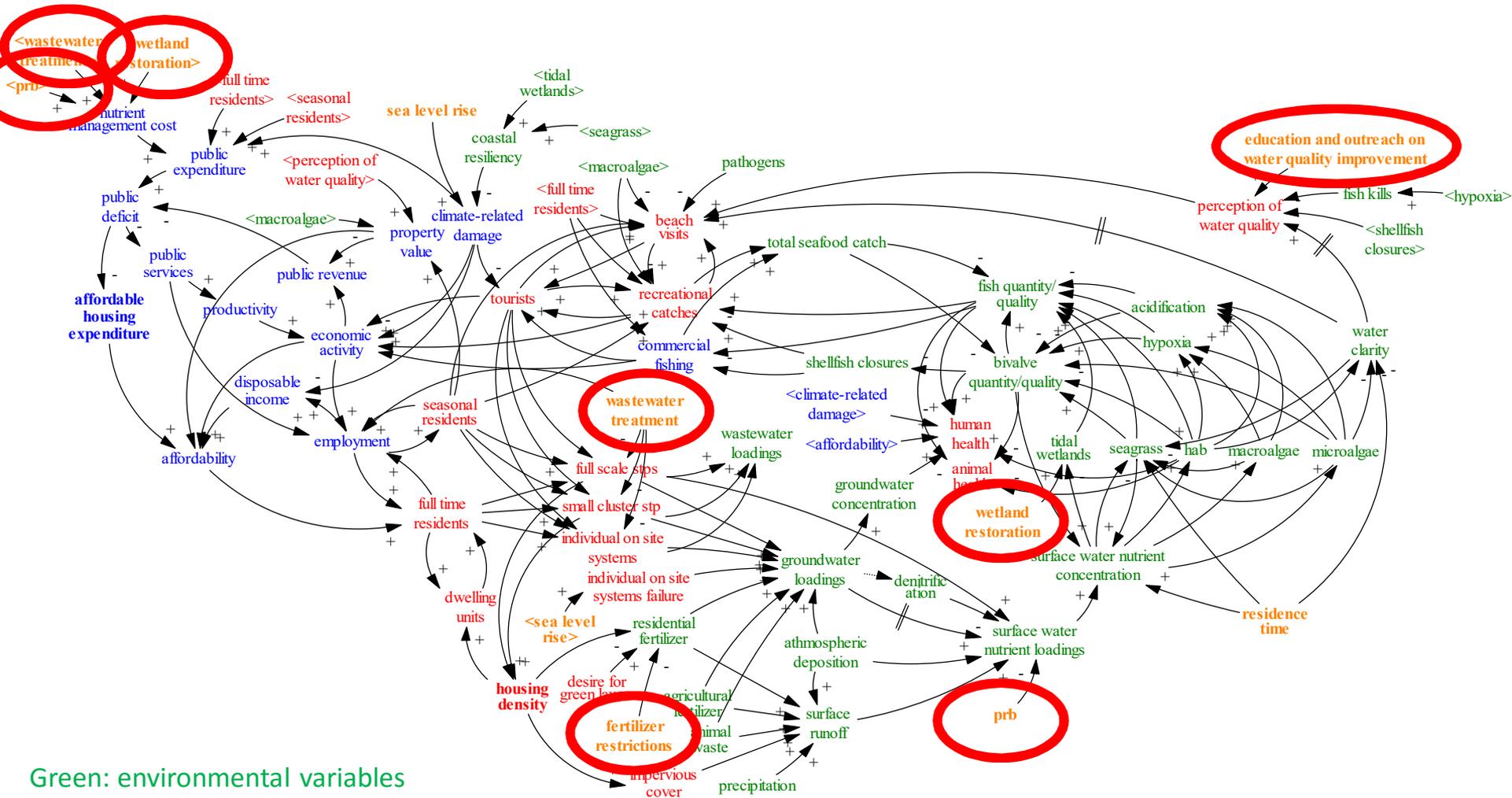
- Reflecting scientific uncertainty; Reflecting risks; Recognizing system resilience.
- Setting value chain boundaries for evaluation, from upstream inputs all the way to consumption & waste disposal

•Reflecting Spatial Scales in evaluation and accounting

Describing the many uses i.e. “Applications” of a Comprehensive and Universal Evaluation Framework, especially,

- 1.Comparing farming systems
- 2.Evaluating impacts of alternative policy scenarios vs “BAU”
- 3.Comparing across models of diets / food plates
- 4.Comparing across models of food products
- 5.Reflecting as SEEA vs unadjusted SNA accounts

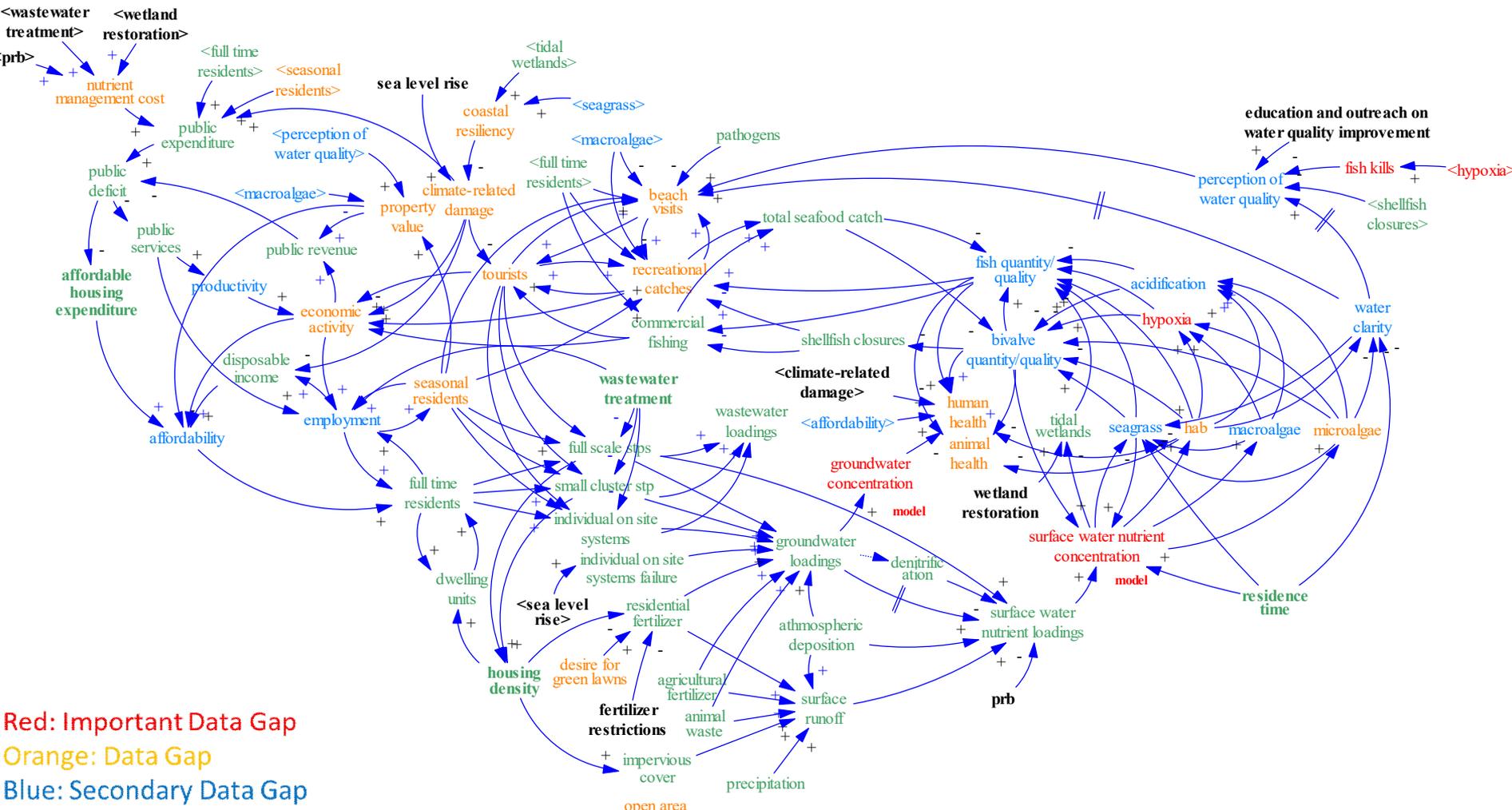
# Systems analysis: real life example



Green: environmental variables  
 Red: social variables  
 Blue: economic variables  
 Orange: external factors (e.g. climate trends and policy)

Source: Andrea Bassi & KnowlEdge Sàrl

# Systems analysis: real life example



Red: Important Data Gap  
 Orange: Data Gap  
 Blue: Secondary Data Gap  
 Green: No Data Gap  
 Black: Scenario Driver (User-Defined Input)



## TEEBAgriFood Foundations, CHAPTER 7

### **Valuation methodologies: an overview, and advances in modeling & measurement**

- From the “what and why” (framework) to the “how” (methodologies) of evaluation; Methods for ‘evaluation’ vs ‘economic valuation’
- Recognizing alternative methods in eco-agri-food contexts, their applicability, selecting the most fit-for-purpose.
- In ‘eco-agri-food’ systems context, summarizing useful valuation methodologies ( note: avoid repeating TEEB-D0 Ch5, just summarize very briefly if needed).
- Addressing which flows along value chains are ethical or appropriate to measure, qualify, quantify, or monetize.
- Considering lock-ins, leverage points, and governance factors that influence evaluations.
- The role & ethics of discounting (if needed, only brief overview of TEEB-D0 Ch6).
- The integral need for counterfactuals, scenario analysis, hence modeling in evaluation and economic valuation
- Advances in measuring and modeling food value chains & progress towards “cradle to grave” evaluations
- advances in establishing value chain traceability (include illustrations) and importance for TEEBAgriFood Framework applications. Advances in measuring and modeling human health impacts of food and agriculture.
- (Note: examples may include evaluations /costs of antibiotic resistance, endocrine disruption, lifestyle ailments, etc).
- Evaluating scientific uncertainties and risks



⊕ **Coverage of the TEEB Agrifood Framework in this study (Interim Report Citation)**

| Value chain stages<br>Visible and invisible flows                                 | Production<br>(and associated waste) |                                  |   | Processing and Distribution<br>(and associated waste) |                   |        | Consumption (and associated waste)     |
|---|--------------------------------------|----------------------------------|---|---|-------------------|--------|--|
|   | Landscape                            | Infrastructure and Manufacturing | Farm                                      | Wholesale   | Food and Beverage | Retail | Industry/<br>Household/<br>Hospitality |
| Flows generated at the level of   |                                      |                                  |   |   |                   |        |  |
| Value Captured by System of National Accounts (SNA)                               |                                      |                                  | Income from yield                         |   |                   |        |  |
| Provisioning Services (Materials, Energy, etc.)                                   |                                      |                                  | Yield                                     |   |                   |        |  |
|   |                                      |                                  | Fresh Water                               |   |                   |        |  |
|   |                                      |                                  | Timber, fuelwood, honey, medicinal plants |   |                   |        |  |
| Regulation and Maintenance Services (Soil, Water, Habitat for biodiversity, etc.) |                                      |                                  | Freshwater quality                        |   |                   |        |  |
|   |                                      |                                  | Carbon storage and sequestration          |   |                   |        |  |
|   |                                      |                                  | Soil erosion                              |   |                   |        |  |
|   |                                      |                                  | Soil fertility                            |   |                   |        |  |
|   |                                      |                                  | Biodiversity                              |   |                   |        |  |
|   |                                      |                                  | Pollination                               |   |                   |        |  |
| Cultural Services (Heritage, Recreation, etc.)                                    |                                      |                                  | Pest Control                              |   |                   |        |  |
| Health Impacts (Nutrition, Lifestyle diseases, Antibiotic resistance, etc.)       |                                      |                                  |   |   |                   |        |  |
| Pollution Impacts (Nitrates, Pesticides, Heavy metals, etc.)                      |                                      |                                  |   |   |                   |        |  |
| GHG Emissions (CO <sub>2</sub> , CH <sub>4</sub> , etc.)                          |                                      |                                  |   |   |                   |        |  |
| Social values (Food security, Gender equality, etc.)                              |                                      |                                  | Food security/ access                     |   |                   |        |  |
| Risks and uncertainties (Resilience, Health, etc.)                                |                                      |                                  |   |   |                   |        |  |



## TEEBAgriFood Foundations, CHAPTER 8

### Using the framework: challenges and examples

- The importance of the Framework as a “set” rather than a “menu”, and of transparency when selecting “sub-sets”.
- The challenge of data and research availability, and managing with the limits of available research.
- Prioritizing research to ‘populate the framework’.
- Commentary on the evolving nature of the Framework as issues, concerns, methods and data recorded today will differ from those used tomorrow.
- Showcased examples to demonstrate how the framework can be operationalized, through one or more applications which evaluate & compare (a) production systems/management practices, (b) impacts of alternative products, (c) impacts of alternative policy scenarios; (d) impacts of different diets or food plates (e) use of unadjusted vs. adjusted National Accounting metrics.
- (Note: The results of the 4-5 new studies commissioned for applying the Framework will be summarized included here as illustrations.)



## TEEBAgriFood Foundations Ch.9 On Sugar and the “Speed of Change” ...

- Advised daily dose of sugar<sup>2</sup>: 30g (UK, NHS)
- Can of Coke (330ml) contains 35g of sugar<sup>3</sup> (116% of advised daily dose)
- Global spending on food marketing to youth= \$1.8 billion (2009)<sup>4</sup>
- 51% of this spending is in sugary drinks and other sugary products
- Under 1% of this is spent on fruit and vegetables

### On Coke & Obesity...

✧ Official Advert

<https://m.youtube.com/watch?v=>

✧ Social Media Response

<https://youtu.be/bHhCP5ad-zM>

|                                      | Brought to Public Attention | Legislative / Policy Response |
|--------------------------------------|-----------------------------|-------------------------------|
| Cigarette Smoking / Cancer risks     | 1930s                       | 1970s                         |
| Leaded Gasoline / Nerve system risks | 1920s                       | 1970s                         |
| Excessive Sugar / Obesity & Diabetes | ??                          | ??                            |

<sup>1</sup> [www.goo.gl/cQk7w8](http://www.goo.gl/cQk7w8) | <sup>2</sup> [www.nhs.uk/chq/pages/1139.aspx?categoryid=51](http://www.nhs.uk/chq/pages/1139.aspx?categoryid=51) | <sup>3</sup> [www.goo.gl/U79pQ8](http://www.goo.gl/U79pQ8)

<sup>4</sup> [www.goo.gl/b0jfYW](http://www.goo.gl/b0jfYW) | Picture from [www.goo.gl/gRyr9V](http://www.goo.gl/gRyr9V)



## TEEBAgriFood Foundations, CHAPTER 9

### TEEBAgriFood's 'Theory of Change'

- How changing the way we measure the performance of agricultural and food systems (including significant interacting systems such as land use, freshwater management, demographics and labour) can catalyze a broader paradigm shift in evaluation, accounting, education and communication towards changes in policymaking, business and consumer behavior.
- Challenges for our Theory of Change... and Responses



## Some Relevant Aphorisms ?

✧ *“Nothing worthwhile was ever achieved without deep thought and hard work”*

J.R.D.Tata

—

✧ *“Sunlight is the best disinfectant”*

✧ *“Unity is Strength: where there is teamwork and collaboration, wonderful things can be achieved”*

Mattie Stepanek

—

✧ *“There is safety in numbers”*



## Thank you!

