



UN Environment

The Economics of Ecosystems and Biodiversity

Agriculture & Food

Training on Scenarios and Models
Wednesday 27 February 2019, Nairobi
International Symposium

Supported by:



Federal Ministry
for the Environment, Nature Conservation
and Nuclear Safety



European
Commission

GLOBAL
ALLIANCE
FOR THE
FUTURE
OF
FOOD

based on a decision of the German Bundestag

teebweb.org

Session 1: PARTICIPATORY SCENARIO DEVELOPMENT

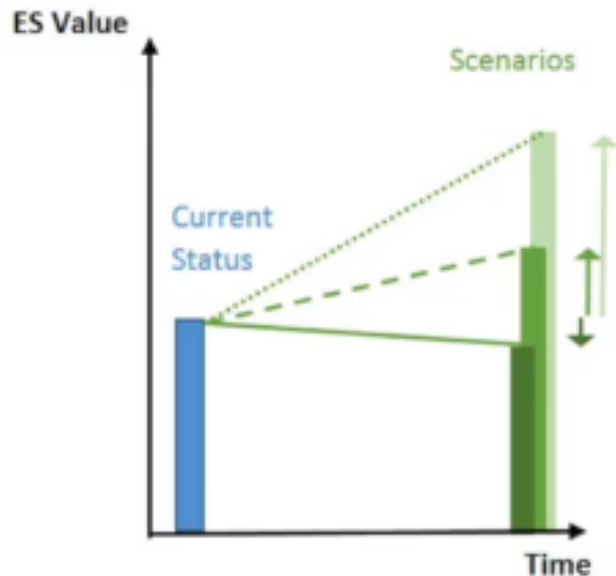
***“DEEP IN OUR HEARTS,
WE WOULD ALL
CHOOSE A SCENARIO
WITH NO SURPRISES”***



Scenarios and models are important tools for understanding and communicating the effects of natural and human drivers on ecosystem services

Selecting the right tools is just as complicated.

Developing scenario storylines

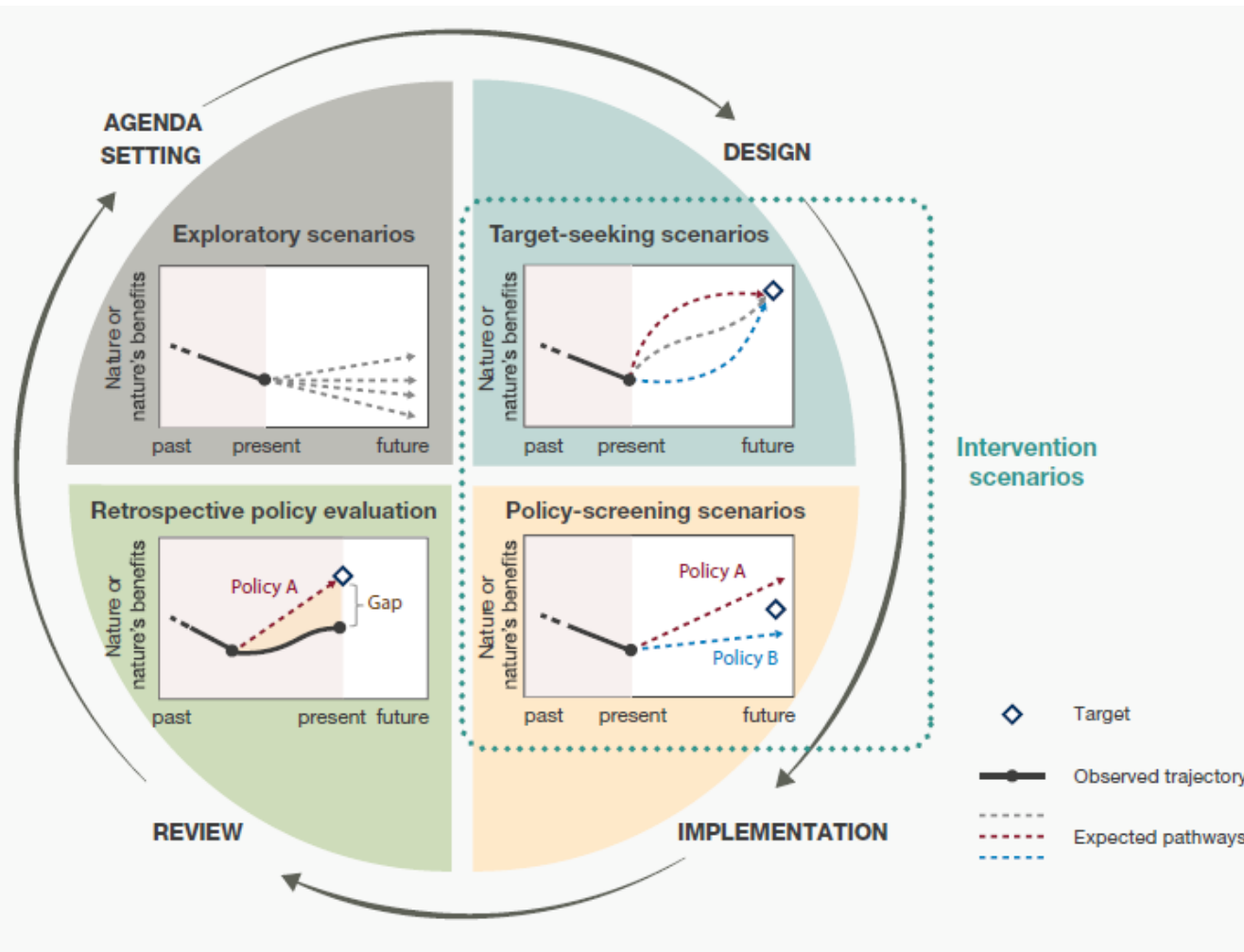


1. Select the right scenario approach (do's and don'ts)
2. Align scenario type to policy context
3. Define spatial and temporal dimension, and number of scenarios
4. Stakeholder engagement
5. Direct and indirect drivers
6. Visualization options

1. Scenario approach - what makes an effective scenario?

1. Relevance
2. Participatory
3. Legitimate
4. Plausible
5. Distinct and contrasting scenarios
6. Scientifically credible
7. Comprehensive

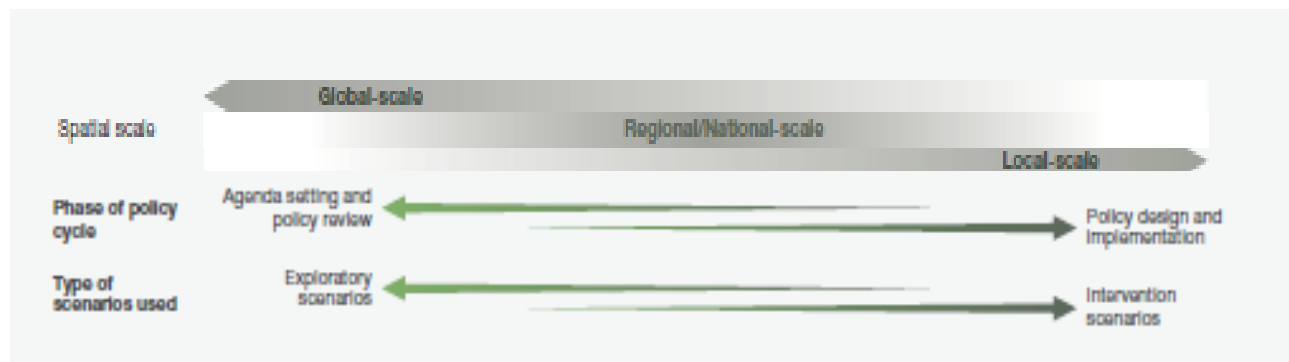
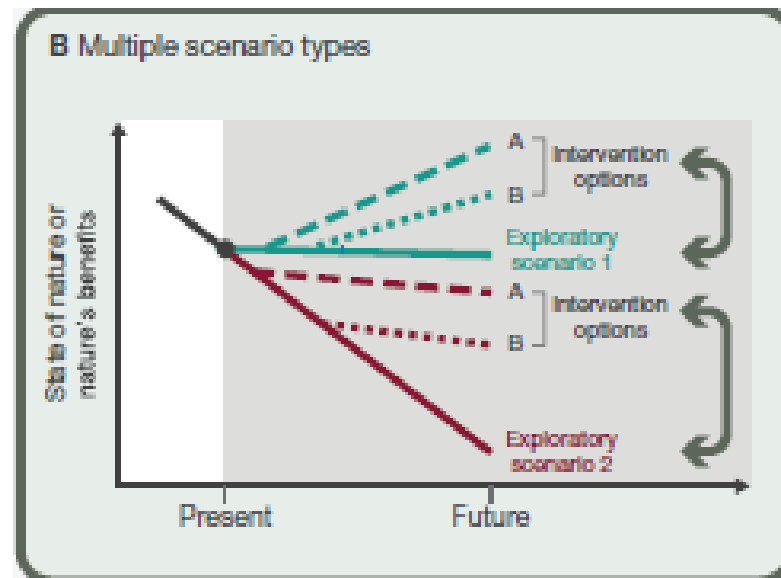
2. Align scenario type and policy context



Choice of type of scenario is highly contingent on the policy cycle phase

TEEB typically focuses on intervention scenarios

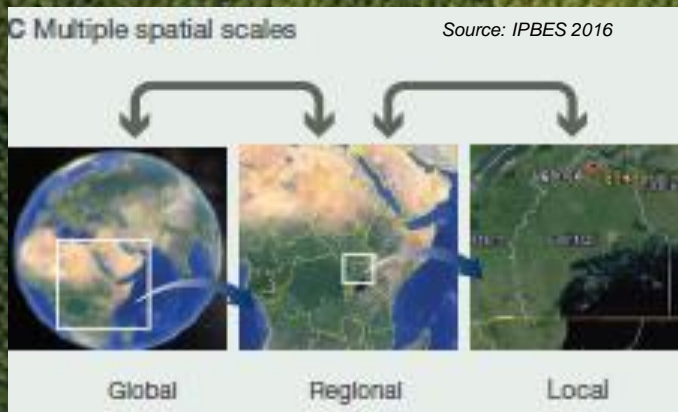
Linking different types of scenarios, spatial scale and policy cycle phase



Scenario type	Summary	Relevance for policy making process	Role of drivers	Agri examples
EXPLORING alternative futures by using exploratory scenarios	Where might the future take us and what can we do to prepare? Based on plausible alternative futures built on extrapolations of past trends and new assumptions	Agenda setting: creates awareness of future policy challenges Assumes the absence of explicit policy intervention	Projections of indirect drivers and their effects on direct drivers	Diets: Mediterranean diet vs fast-food diet Agriculture systems: organic versus intensification
INTERVENTION Using target-seeking scenarios	Select the policy intervention that best meets goals Starts with a prescriptive vision of the future and then works backward in time to visualize different pathways of achieving the future target	Policy design: Designs for real policies, plans and projects Policy prescriptive: identifies the conditions necessary to achieve the desired target	Identification of driver values consistent with the desired target	Example objective/target: Food production self-sufficiency Toxin free nation Reaching SDG, Aichi target (scoping policies to achieve that goal)
INTERVENTION Policy screening using ex-ante assessment	What are desirable futures? Depicts the future effects of specific policy interventions	Policy implementation: policy screening and impact assessment of alternative policy options before Implementation Stakeholders' concepts of desirable or undesirable futures	Driver projections are used as reference for policy options	Tax on soda, pesticides (results before and after application) Development plans including agri zoning configurations Criteria for payments for watershed services
POLICY EVALUATION using ex-post assessment	Looks backward to analyse the gap between policy objectives and actual policy results, after using counterfactual scenarios	Reactive policy Assessment Post hoc evaluation of policy effectiveness	Identification of drivers explaining discrepancies of outputs	(Not applied in TEEBAgriFood Country Implementation)

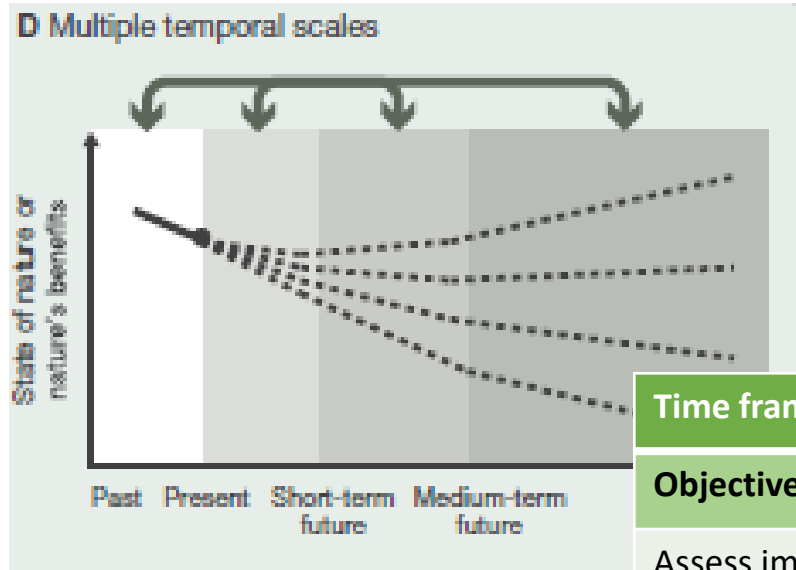
The spatial dimension

- Depends on the TEEB study objective
- Scenario need to be relevant for the scale of the policy you want to inform, but this does not necessarily mean that the analysis needs to be at this scale
- Combining multiple scales



*Everything happens somewhere.
Context is everything.*

The time dimension



Time frame examples

Objective analysis

Time frame

Assess immediate impacts of a decision/plan

Short time frame (eg. 5-15 years, SDGs)

Assess carbon sequestration impacts

Long time frame (eg. 30-50 years to address forest regrowth)

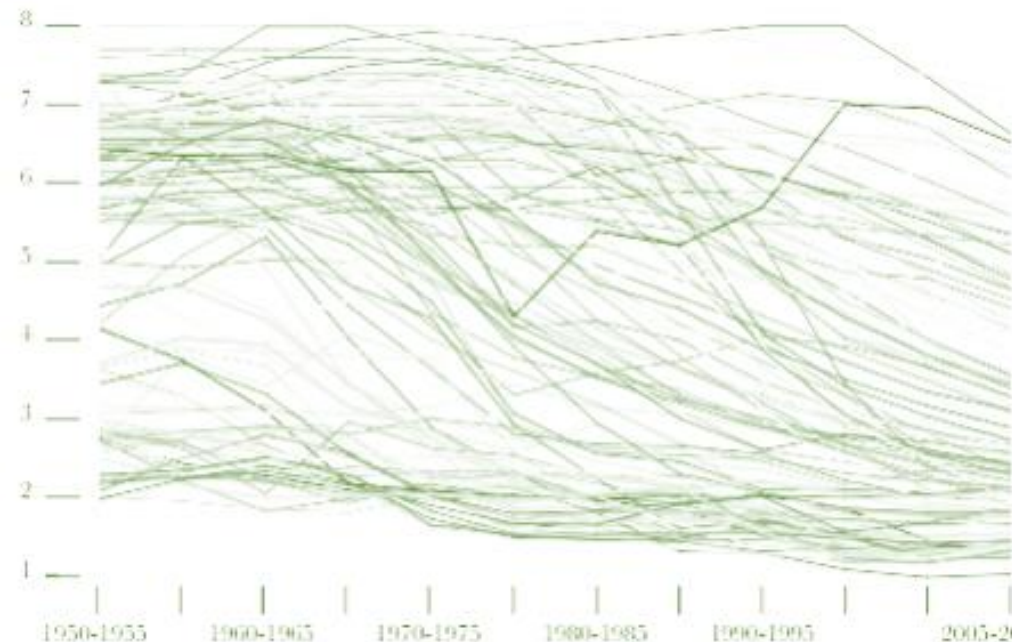
Deforestation scenario

Multiple: Five-year time steps over a 50 year time frame (deforestation may occur in the first five years and again last five years)

[OTHER?]

The number of scenario storylines

Important! Can affect which potential futures and policy options are considered, debated and realized



1: What's the point?

2: May not represent the complexity and nuance needed – often represent polarized extremes

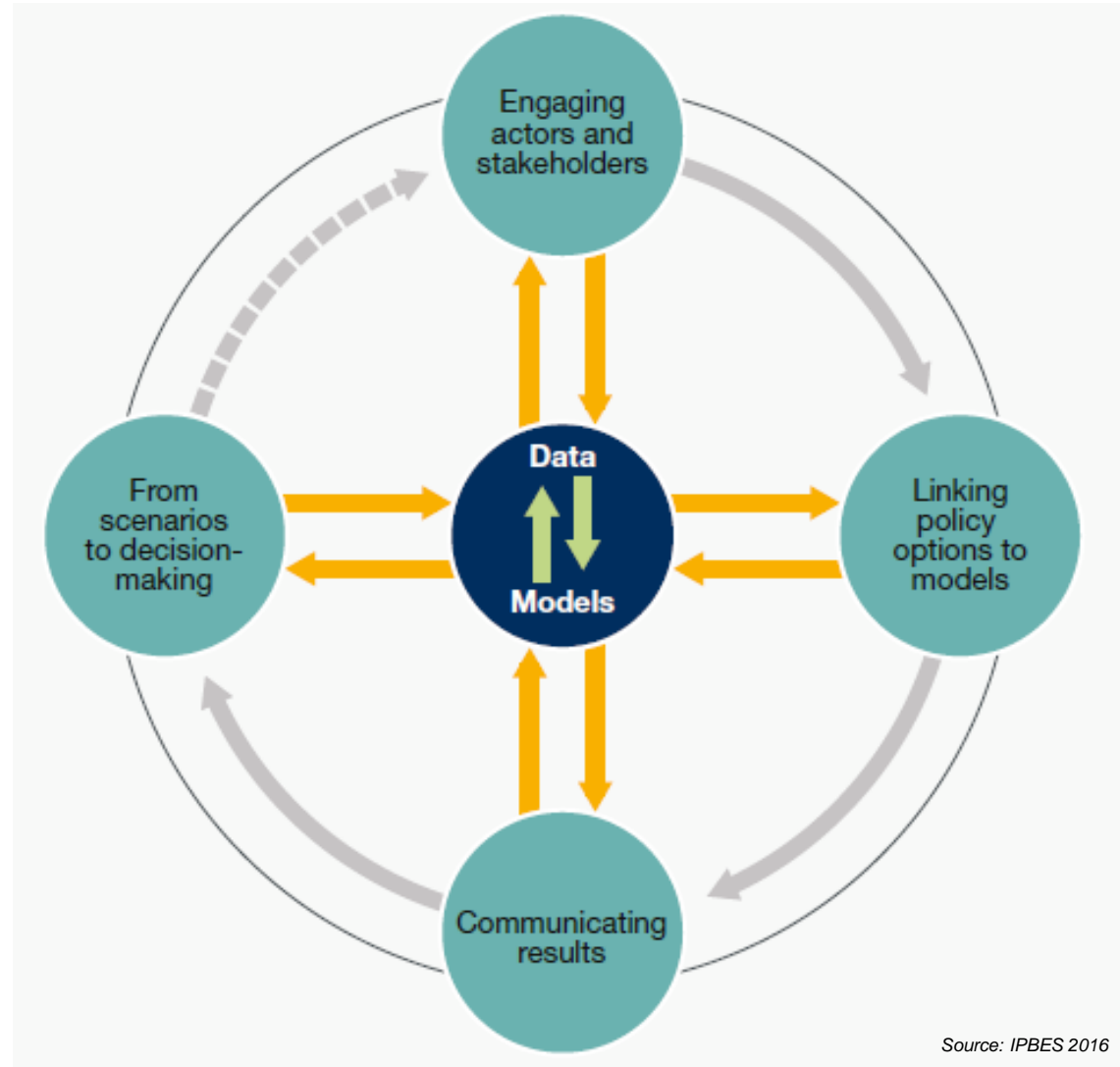
3: Middle scenario may automatically be mistakenly interpreted as 'most likely' or 'preferred'

4: With even number of scenarios, stakeholders may be more likely to look at the full range of options

5 or more: sufficiently contrasting?

Stakeholder engagement

results
process policymaking
plans **champions** benefit
adopted legitimacy local-knowledge
accepted **transparency** involvement
decisions **ownership** feel
participatory time-consuming processes
resource-intensive scenarios bias
empowered



3. Translate qualitative storylines into driver scenarios

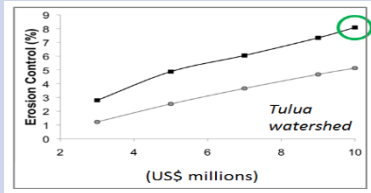
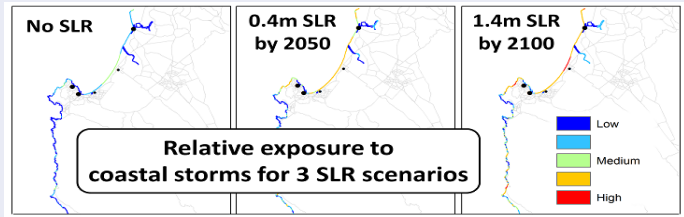
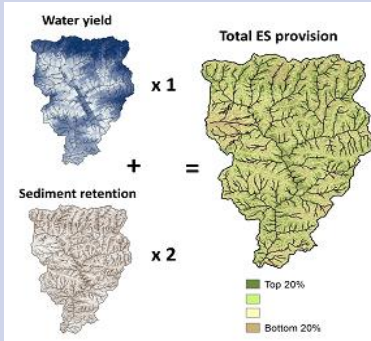
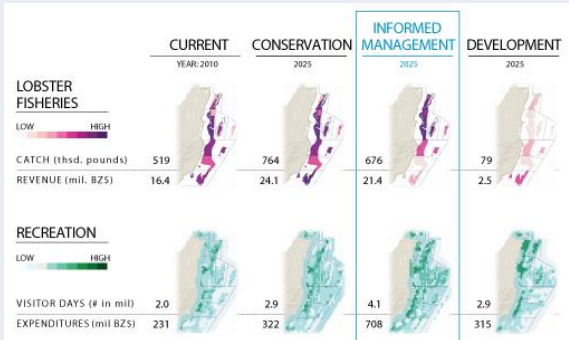
- Drivers are the foundation of scenarios
- Key questions about drivers when developing scenarios:
 - Which drivers, and how many should we consider explicitly?
 - What scale of drivers should we consider?
 - Drivers both within and beyond the decision makers' control?




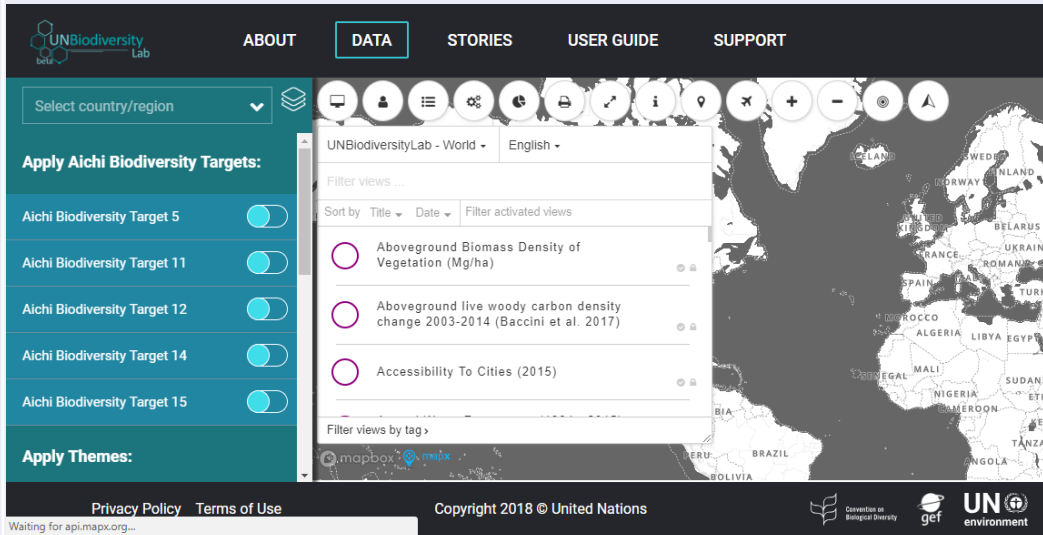
Finding and accessing data for participatory scenario development

- Land use and land cover data: most scenarios begin by understanding the current situation - presenting this to stakeholders as they think about possible future changes
- Historical data: Develop a projection that predicts the expected future based on past trends
- Other data - context dependent (linked to drivers of change)

Visualization options

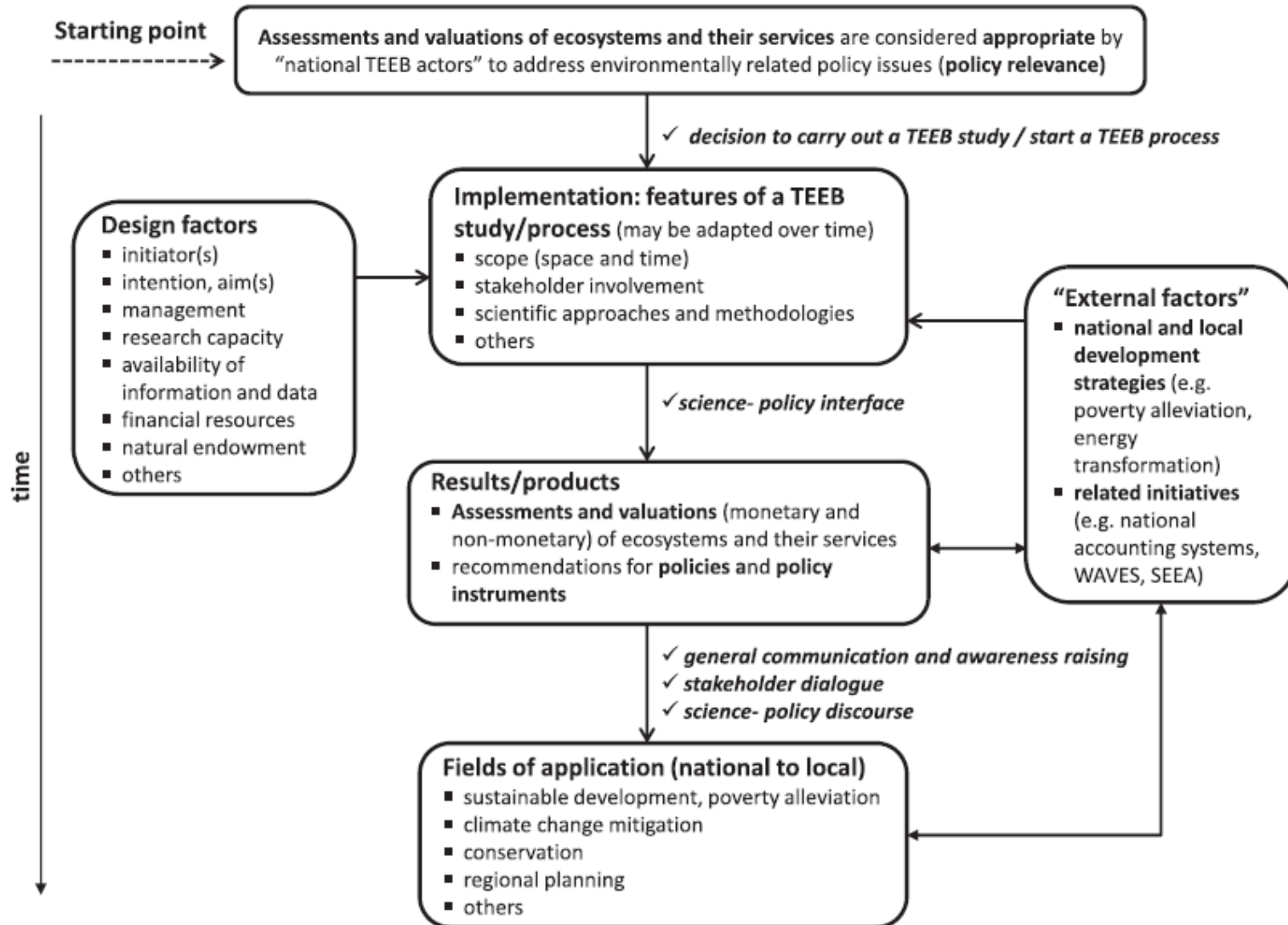
Visualization type	Description	Example
Bar or line charts	Clearly highlight trends or differences in scenarios or services	
Change maps	Visualize differences across scenarios; highlight drivers of change	
Rank across multiple services	Summarize top 20% of ecosystem services across a land or seascape	
Overlay multiple visuals	Combine two visualization types (e.g. bar chart and scenario maps) to communicate data relationships	

Visualization options (continued)

Visualization type	Description	Example
Aggregate results	Highlight a "serviceshed" which is a specific area that provides a service to a group of people (e.g. aggregate water purification services by watershed or pollination services by foraging range)	
Interactive maps/animations	Allow viewers to interact with GIS data and other information through a standard web browser; users can zoom in to select areas and overlay different layers; no GIS is required.	

<https://www.mapx.org/>

TEEB Implementation: managing the science-policy interface



TEEB 6 step approach

STEP 1: Refine the objectives of a TEEB Country Study by specifying and agreeing on the key policy issues with stakeholders

STEP 2: Identify the most relevant ecosystem services

STEP 3: Define information needs & select appropriate methods

STEP 4: Assess and value ecosystem services

STEP 5: Identify and outline the pros and cons of policy options, including distributional impacts

STEP 6: Review, refine and report – Theory of Change

Scenario development steps

iterative approach in which scenarios are revised based on feedback from decision makers

Select the right scenario approach

Develop scenario storylines

Create scenario maps: how ecosystem service provisioning alters tomorrow compared to today

Scenario modeling
analysis of marginal change over time

Use results
comparative change of ecosystem services under different scenarios

Group exercise: Scenario storyline development by applying TEEB approach

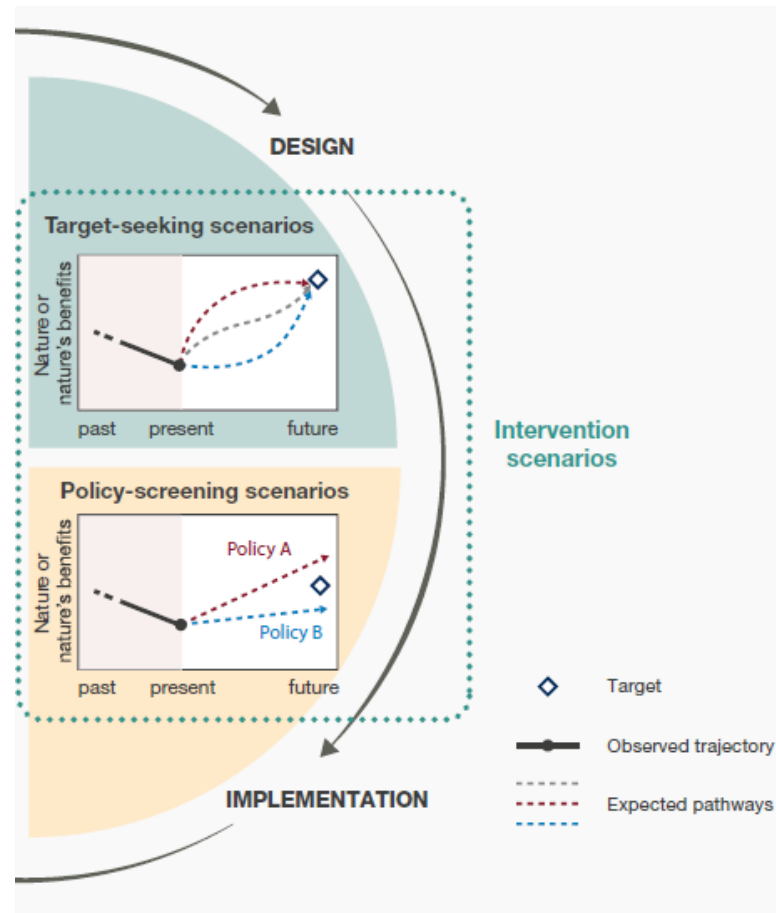
1. Identify policy entry point

Policy design – target seeking scenario: Identify a policy target/goal that your country has set in terms of agriculture and food systems

Policy implementation – policy screening scenario: Identify alternative policy options around pressing agriculture and food policy concerns that are not yet under implementation

2. Develop scenario storyline

- Select one of the above policy entry points (or a combination), and refine scenario storyline with a number of scenario storylines
- Which drivers, and how many should we consider explicitly when developing scenario?
- What is the spatial and time dimension of your scenario?





Resources

TEEBAgriFood Foundations - chapter 7-8
methodology and framework application:
<http://teebweb.org/agrifood/scientific-and-economic-foundations-report/>

Previous TEEB Country Studies:
<http://www.teebweb.org/areas-of-work/teeb-country-studies/>

Scenario hub Natural Capital Project:
<http://scenariohub.net/about>

IPBES scenarios and models:
<https://www.ipbes.net/assessment-reports/scenarios>

Thank you

Come and look for us at
teebweb.org

Chalet in mountain ecosystem in Switzerland, credit: Olivier Rouselle