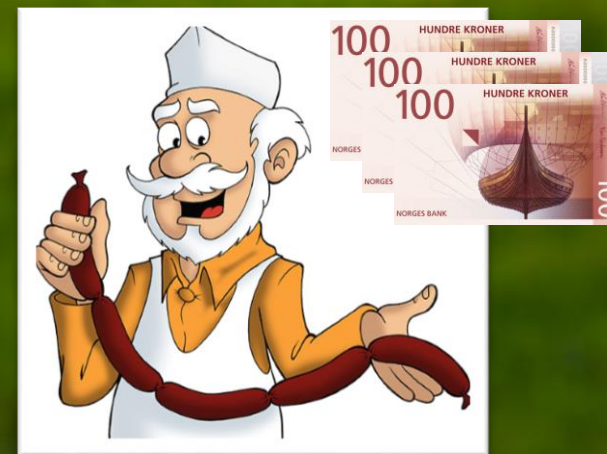




# Biosmart WP6 and WP9 Resources and Value creation

Eirik Mikkelsen, PhD, Research Director





# Norut

Technology, Social Science, Innovation, Barents Biocentre Lab



# WP6 Resources

## Objective

- Provide a **current status** for the Norwegian bioeconomy-relevant **biological**, **industrial** and **human resources**, and to provide **qualitative and quantitative estimates** for the **future resource needs** under scenarios developed in WP2





# WP6 Resources

## Main questions

- (1) what is the current status for **biological biomass resources** in Norway from forestry, agriculture and the marine environment, in terms of annual availability, fluctuations and use? Do the resources meet 2030's needs identified in WP2?
- (2) What relevant human resources are available today, and likely in 2030, in terms of **human capital** (education, demography), and **R&D activities** (infrastructure, research-effort and spending)?
- (3) What **types and capacity for industrial processing** for major types of biological resources and products is present today and could be likely in 2030?
- (4) Where are the **bioeconomic industrial clusters** in Norway currently, and what resources do the different clusters have access to/require?

# WP6 Resources

## Outputs

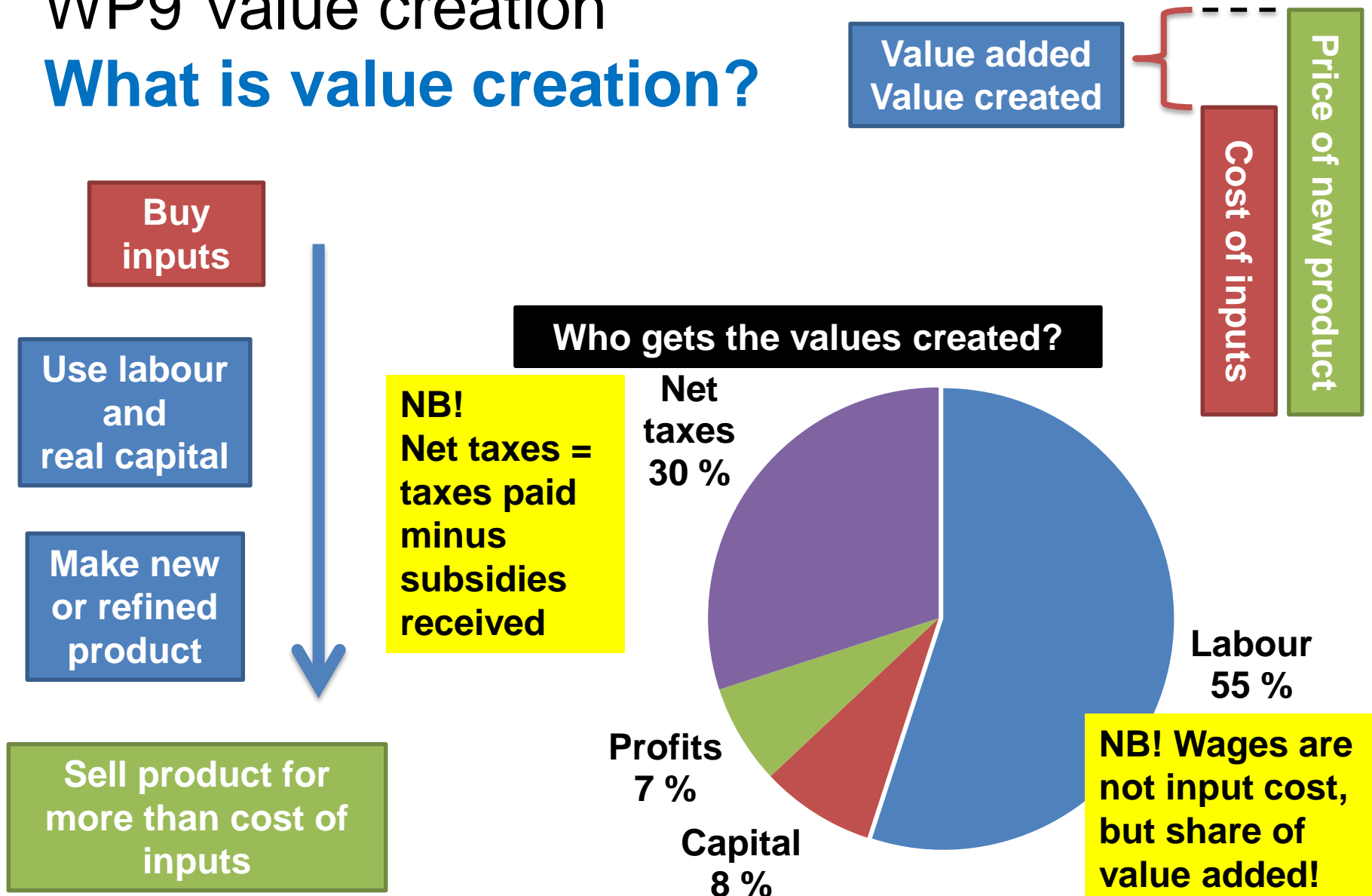
### **Overviews of relevant resources**

Useful for

- (a) the construction of the integrated visions (WP2b)
- (b) the exploration of potential cluster locations for bioeconomic development (WP7).

# WP9 Value creation

## What is value creation?



# Value creation in a value chain

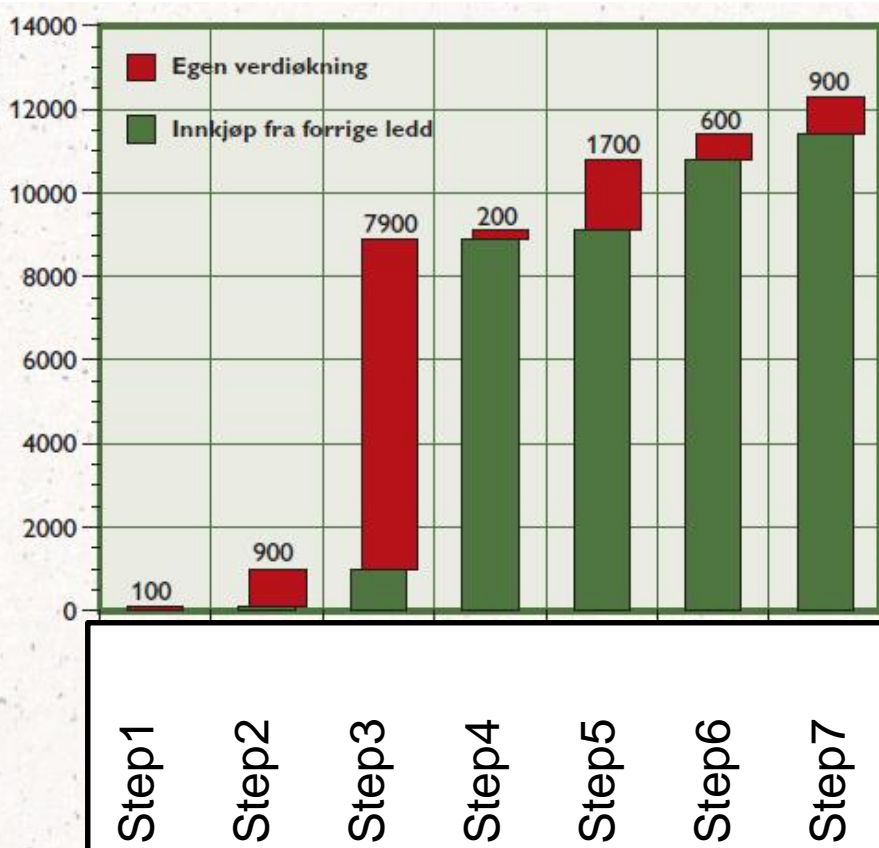
Value added in step

Bought from last step

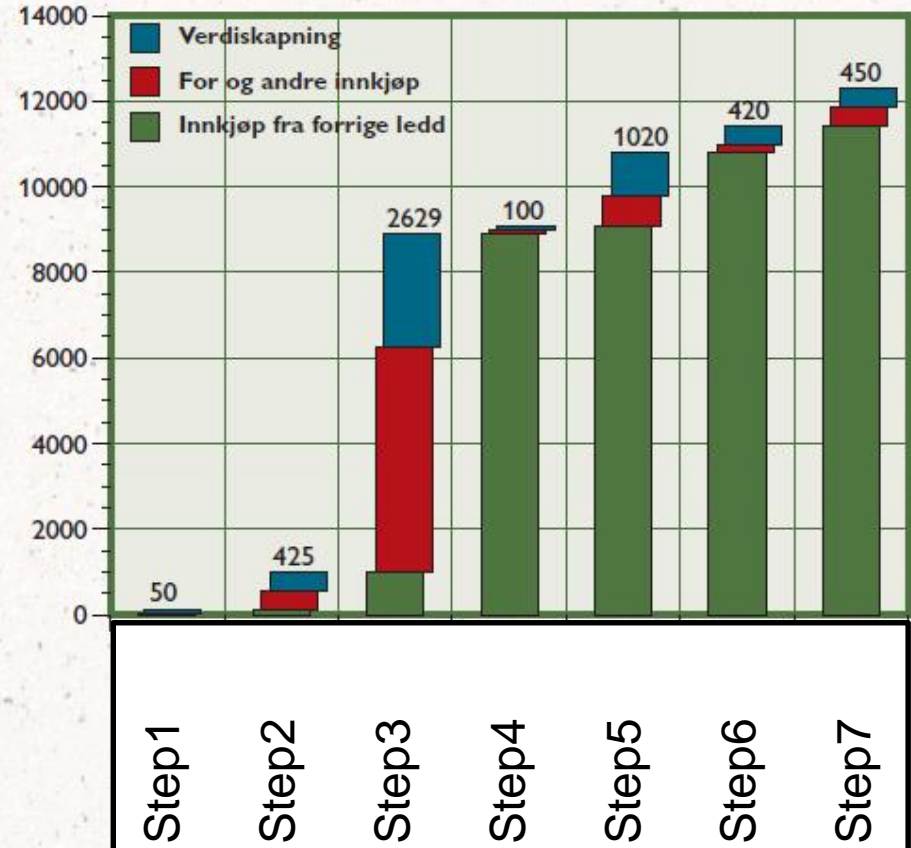
Value creation in step

Bought from others

Bought from last step



www.norut.no



Vassdal and Heen: Verdiskapning i Oppdrettsnæringen i Nord-Norge

# WP9 Value Creation

## Objective

examine

- (1) What is the **current value creation** in the different **segments** of the bioeconomy in Norway?
- (2) How might **demand** and **prices** for input factors and products **change**?
- (3) How might the **value creation** in the different segments of the Norwegian bioeconomy **evolve**? and
- (4) How may the **value creation** in the Norwegian bioeconomy be **in 2030**, both by **industry segments** and **spatially**?

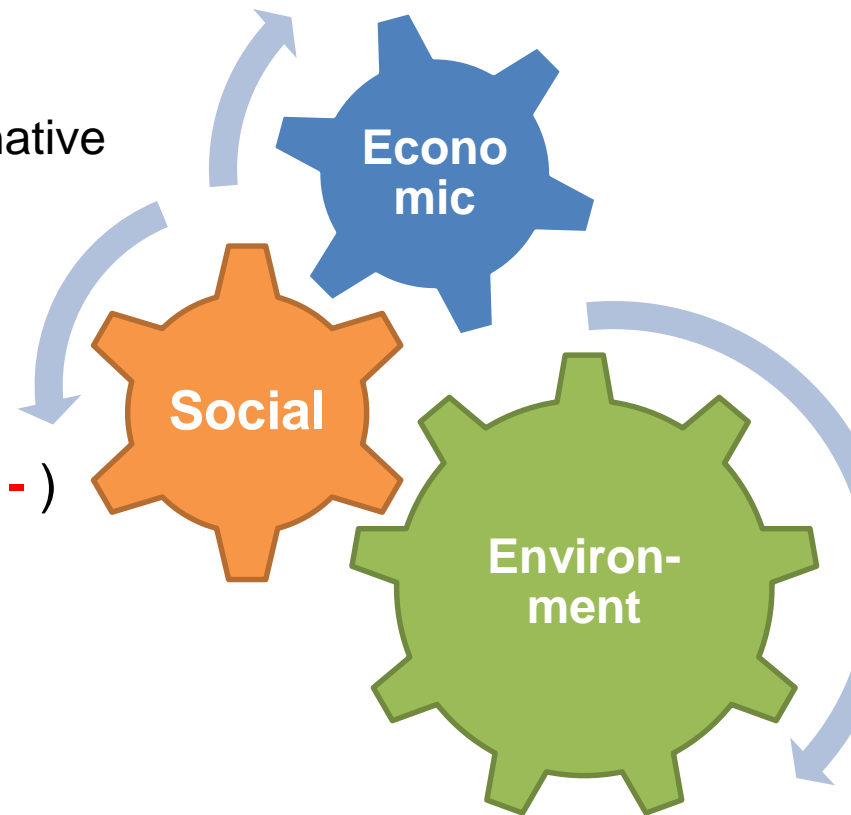




# WP9 Value creation

## Economic sustainability?

- **Profitable**
  - Equal or better profits than best alternative use of inputs
- **Renew capital wear**
  - (capital depreciation)
- **External effects** of production? (+ or -)
- **Socially attractive**
- **Need an integrated assessment of sustainability**



# Personnel & Institutions WP6 and WP9

- **Norut**
  - Eirik Mikkelsen, Sindre Myhr...
- **CRR**
  - Magnar Forbord...
- **NFLI** (NIBIO /Norwegian Institute of Bioeconomy Research)
  - Erlend Nybakk...
- ...to be updated and adjusted...
- [Eirik.mikkelsen@norut.no](mailto:Eirik.mikkelsen@norut.no) – Tel +47 9593 5362

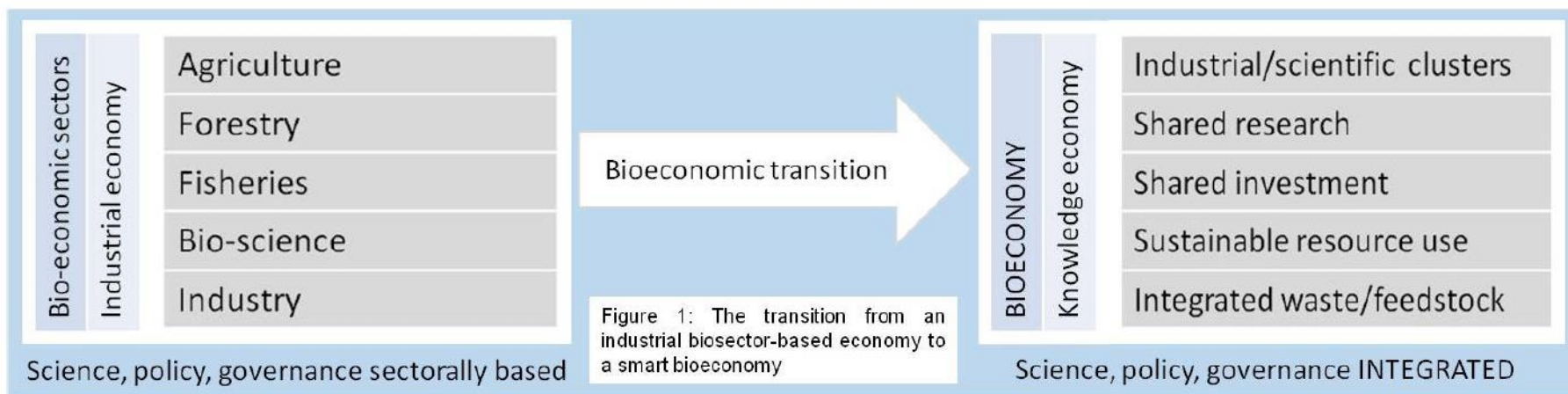
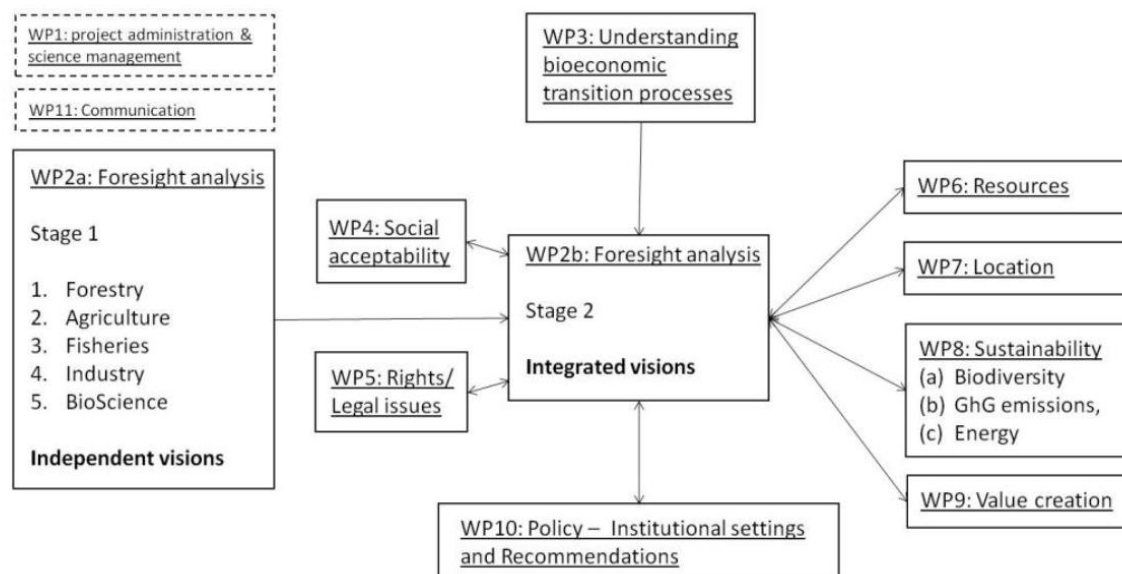


Figure 2: Positioning of Work Packages (N.B. not all linkages between WPs are shown in the diagram)



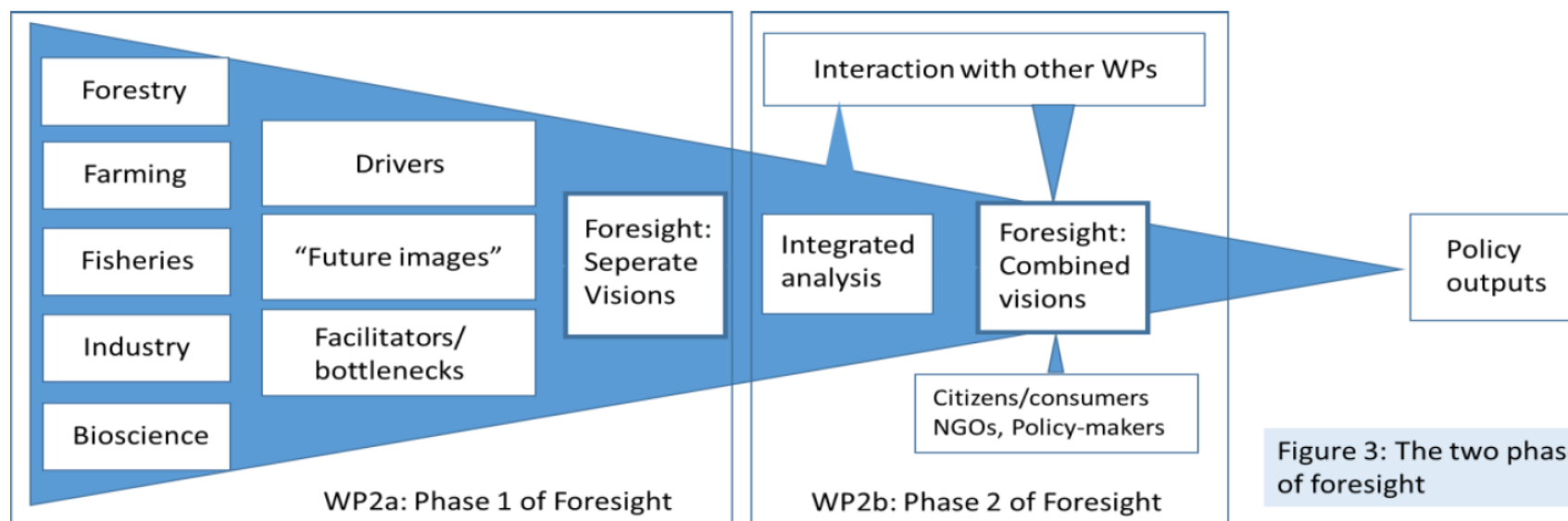
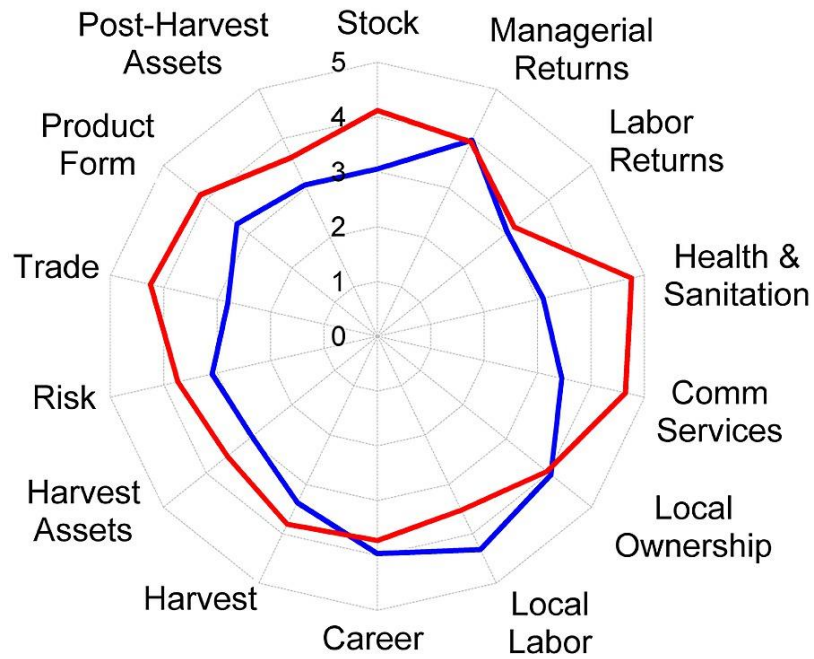
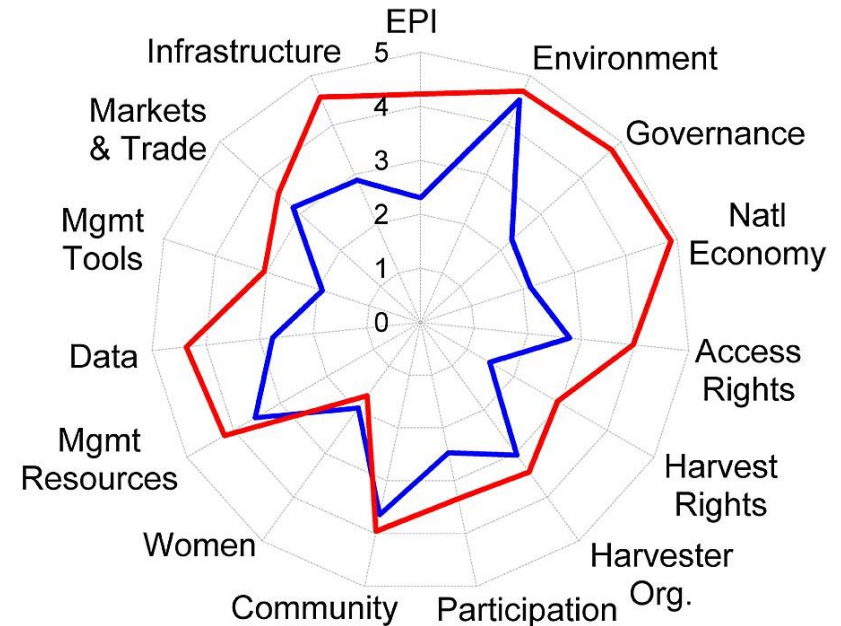


Figure 3: The two phases of foresight

## Output Indicator Dimensions



## Input Indicator Dimensions



- **Blue** = Developing countries. **Red** = developed countries
  - Anderson, James L.; Anderson, Christopher M.; Chu, Jingjie; Meredith, Jennifer; Asche, Frank; Sylvia, Gil; Smith, Martin D.; Anggraeni, Dessy; Arthur, Robert; Guttormsen, Atle; McCluney, Jessica K.; Ward, Tim; Akpalu, Wisdom; Eggert, Håkan; Flores, Jimely; Freeman, Matthew A.; Holland, Daniel S.; Knapp, Gunnar; Kobayashi, Mimako; Larkin, Sherry; MacLauchlin, Kari; Schnier, Kurt; Sobol, Mark; Tveteras, Sigbjorn; Uchida, Hirotsugu; Valderrama, Diego (2015): **Average Triple Bottom Line FPI Scores**. Fig\_5.tif. PLOS ONE.10.1371/journal.pone.0122809.g005.
  - [From: The Fishery Performance Indicators: A Management Tool for Triple Bottom Line Outcomes](#)



Norut - Northern Research Institute is a national research group located in Northern Norway. Norut performs applied research within technology and social science. We have a special focus on the High North. We also have our own innovation company, and an advanced biotechnology laboratory for rent at Tromsø Science Park. Norut currently has 130 employees.

## Research areas:

- Arctic Technology
- Biotechnology
- Renewable Energy
- Health and Welfare
- ICT and Digital Media
- Infrastructure,  
Materials & Structural  
Engineering
- Innovation, Industry &  
Regional Development
- Climate and  
Environment
- Mineral and Process  
Technology
- Oil and Gas
- Remote Sensing,  
Satellites and UAS
- Indigenous People

## **WE CARRY OUT RESEARCH FOR SUSTAINABLE GROWTH IN THE NORTH**

We want to fulfil this vision through applied research for both the public and private sector nationally as well as internationally.

## **WE HAVE KNOWLEDGE ABOUT THE HIGH NORTH**

Norut has first-hand knowledge of the High North and the Arctic. We collaborate on projects in the Nordic countries, Russia, USA and Canada.

## **WE ARE BASED THROUGHOUT NORTHERN NORWAY**

Norut is strategically located throughout Northern Norway, and collaborates closely with UiT The Arctic University of Norway and Narvik University College. We are familiar with the decision-making system and the business community in the north.

## **WE ARE INTERNATIONAL**

Norut has a broad international contact network. We have partners in many European countries connected to our EU projects. Our research results are applicable internationally.

## **WE HAVE CLIENTS WHO RELY ON US**

Our main client groups are industry, the business community, the public sector, the Research Council of Norway and the European Commission. We have long-term commissions for major clients, while still retaining the flexibility to take on smaller commissions with shorter deadlines.

## **WE OFFER SCIENTIFIC STRENGTH AND EXPERTISE**

We are part of international project groups that are leaders in their specialist fields. Our research is internationally recognised and the results are published in respected scientific journals. The majority of the scientists at Norut hold PhD degrees.

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