



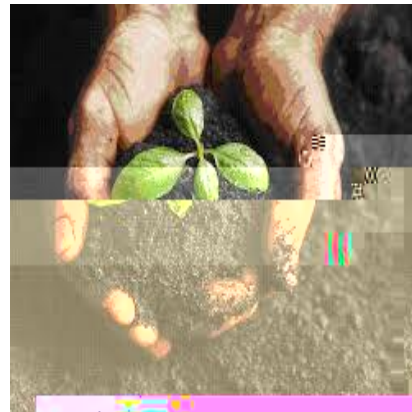
CONTENTS

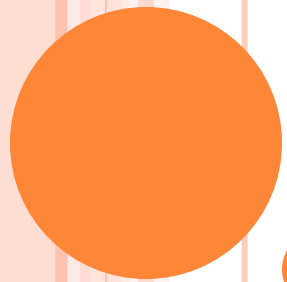
Background and current status of the SEEA

Ecosystem services and the ecosystem accounting model

Incorporating ecosystem services in growth accounting

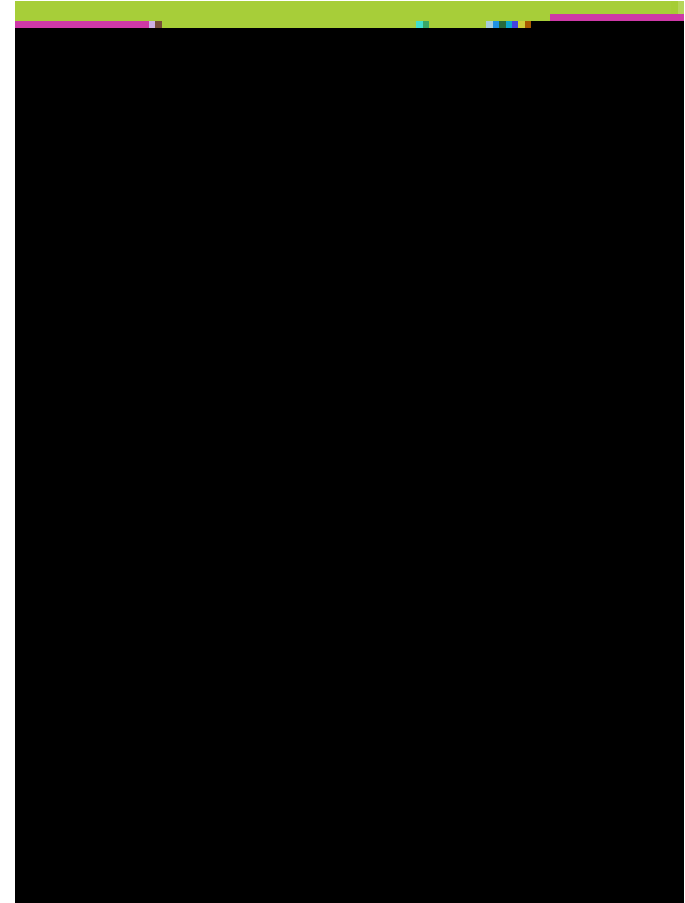
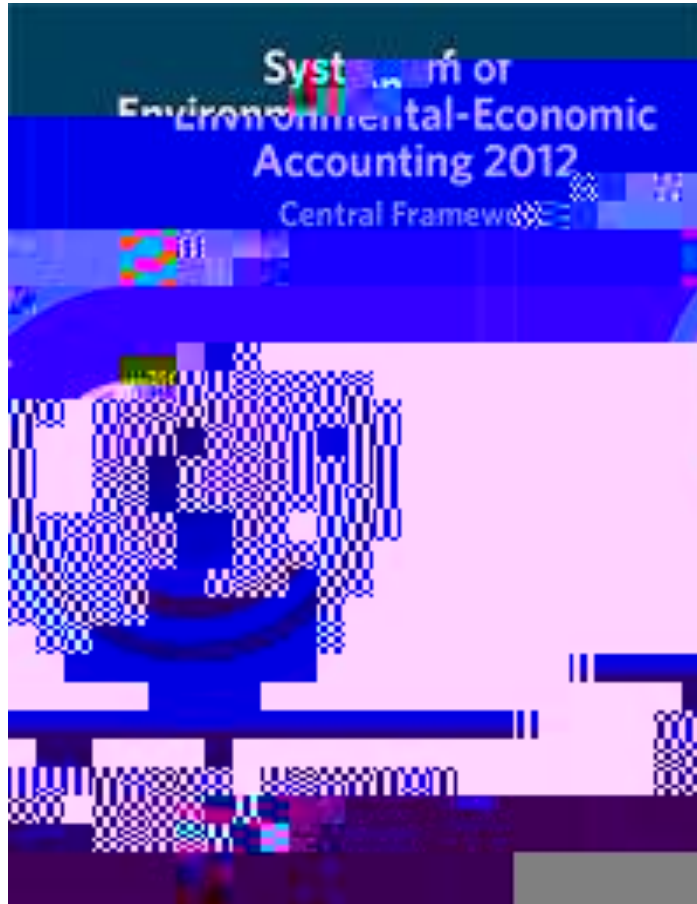
Next steps





1. BACKGROUND

DEVELOPMENT OF THE SEEA



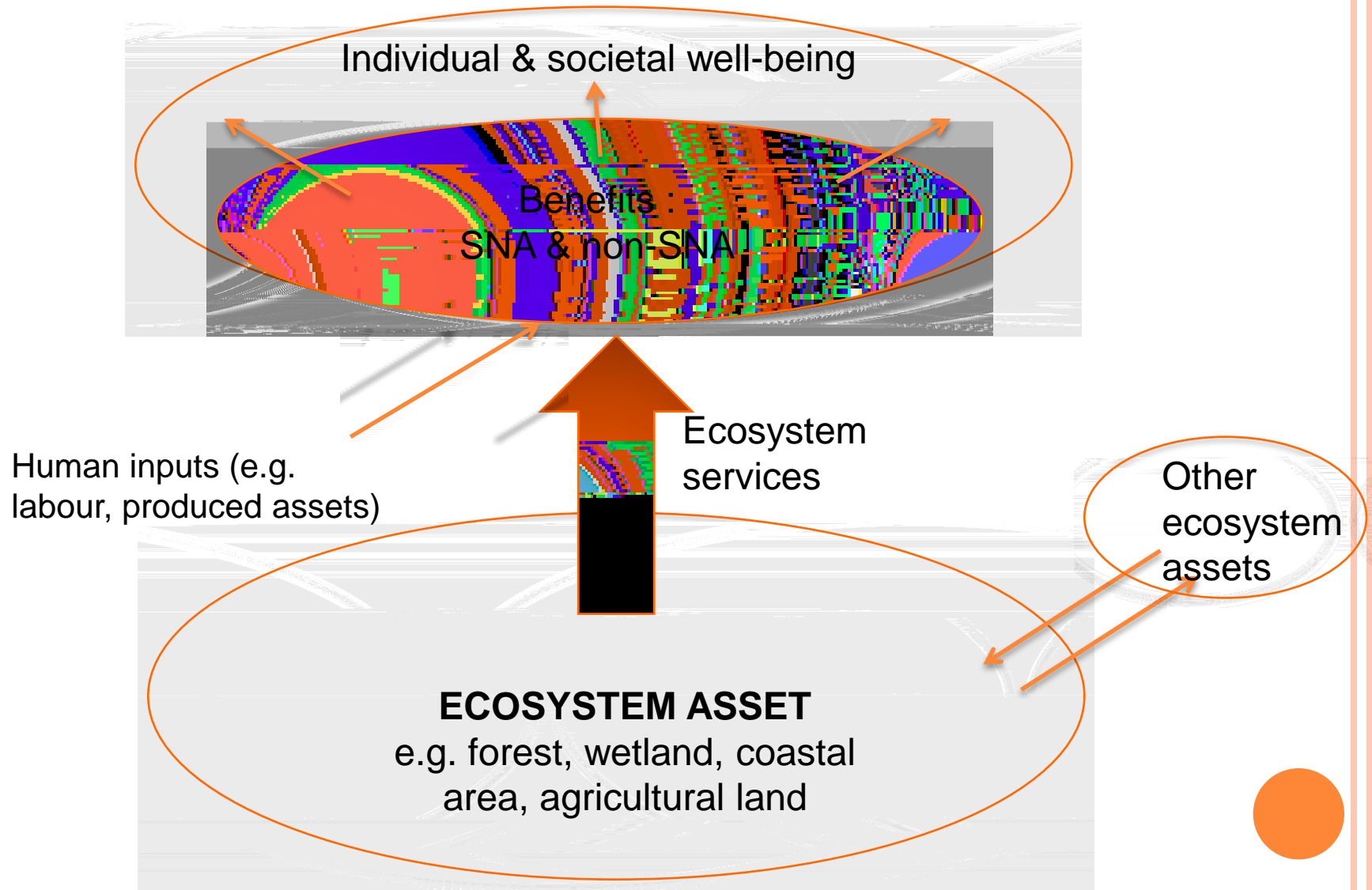


ECOSYSTEMS AS PART OF ENVIRONMENTAL ASSETS

Dual perspective of the bio-physical environment:
individual resources & ecosystem assets



CORE ECOSYSTEM ACCOUNTING MODEL



THE PRODUCTION BOUNDARY

“Production is an activity carried out ... by an institutional unit that uses inputs of labour, capital and goods and services to produce outputs of goods and services” (2008 SNA , 6.24)

In practice:

- Exclude household production of services for itself

 - Except rent of owner-occupiers & wages of domestic staff

- Include household production of goods for itself

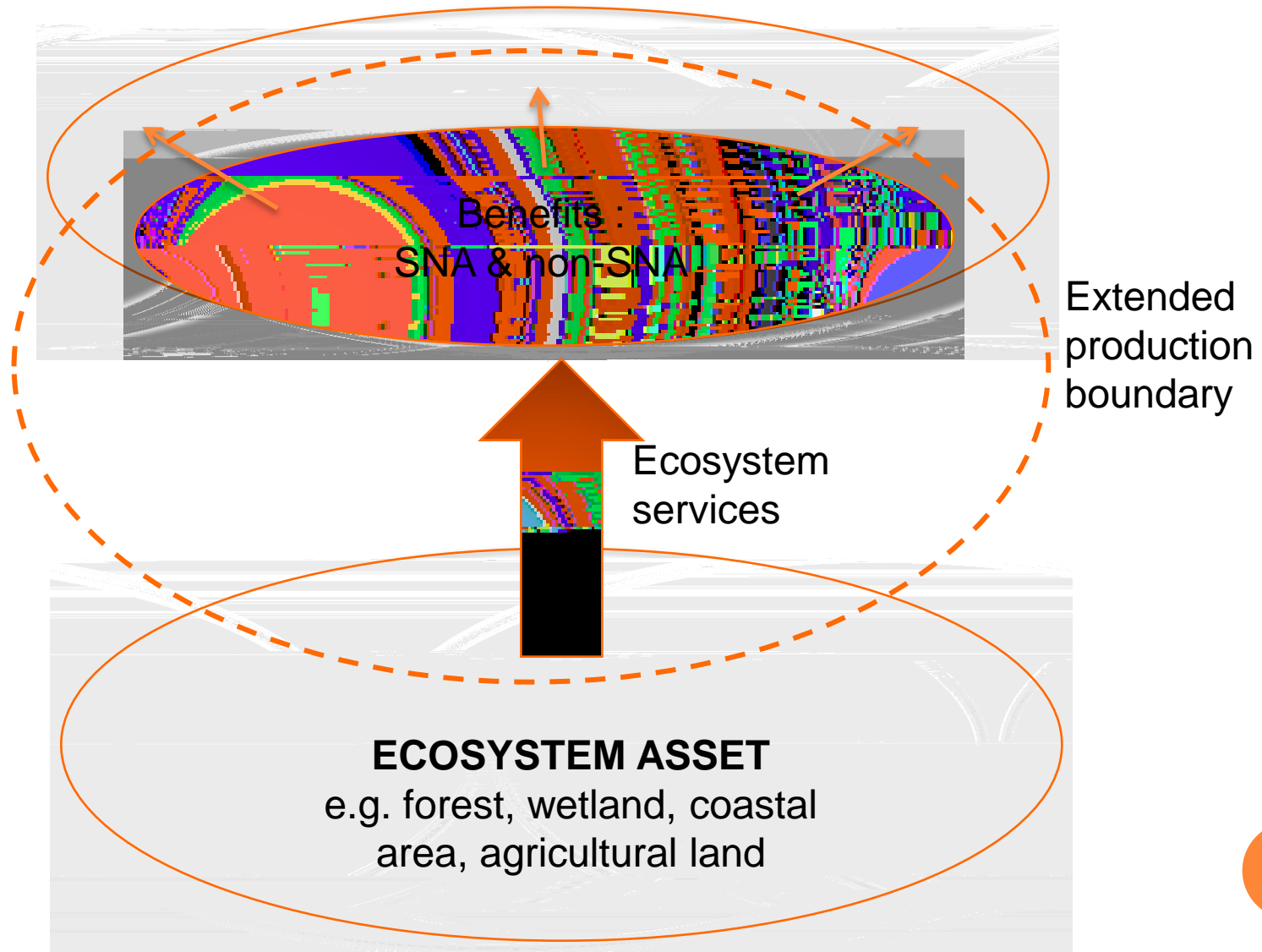
 - Agricultural products, fishing, fuelwood, clothes, furniture, water, energy

- Include concealed and illegal activity

- Exclude “ things” produced by natural processes



CORE ECOSYSTEM ACCOUNTING MODEL



ACCOUNTING IMPLICATIONS OF INCLUDING ECOSYSTEM SERVICES AND NON-SNA BENEFITS

Measures of output, consumption and income larger

Potential value of environmental assets increases

Cost of capital – degradation –





3. IMPLICATIONS AND CHALLENGES FOR MEASURING MFP

LIMITED CASE OF NON-RENEWABLE RESOURCES

Consider first only private benefits – provisioning services

Physical flows (e.g. tonnes of coal) represent the capital service flows (see Brandt, Schreyer, Zipperer, 2013; Schreyer and Obst, 2015)



CASE OF RENEWABLE RESOURCES (TIMBER, FISH, BIOLOGICAL RESOURCES)

Consider first only private benefits – provisioning services

Physical flows (e.g. m³ timber) represent the capital service flows

If extraction > regeneration; then given assumptions on extraction rates and quantity of stock can estimate extraction profile and asset lives

Use standard approaches to estimating resource rent to partition gross operating surplus between produced and non-produced assets to establish cost share



CASE OF RENEWABLE RESOURCES (T, FISH, BIOLOGICAL RESOURCES)

However, if extraction = regeneration - i.e. sustainable use; then

- Asset life infinite

- No depletion of stock

- User cost equal to opportunity cost of capital?

Are there parallels to cite or issues to be resolved?

- Problem of zero or negative resource rent – under sustainable use does exchange value of the ecosystem service tend to zero?

- Others?



EXTENSION TO OTHER ECOSYSTEM SERVICES

Going beyond private / provisioning services leads to

- Expansion in the measure of output/GDP

- Extending the set of natural capital inputs

Need to

- incorporate additional valuation techniques for the measurement of non-market outputs

- recognise multiple owners/beneficiaries and multiple types of capital services from single asset

- understand changes in the condition of ecosystems such that degradation of ecosystems can be assessed, valued and allocated



OECD ENVIRONMENTALLY ADJUSTED MFP

Brandt, Schreyer and Zipperer (2014)



POSSIBLE NEXT STEPS

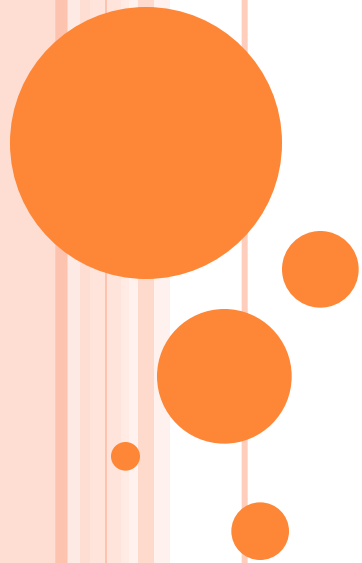
Consider further the mathematics of extended growth accounting to natural capital and the flows of ecosystem services

Consider the potential non-market valuation approaches that would be consistent with price and quantity decompositions of standard capital accounting

Advance project to examine the development of Agriculture MFP using extended growth accounting



THANK YOU



LINKS

SEEA Central Framework

http://unstats.un.org/unsd/envaccounting/seeaRev/SEEA_CF_Final_en.pdf

SEEA Experimental Ecosystem Accounting

http://unstats.un.org/unsd/envaccounting/seeaRev/eea_final_en.pdf

