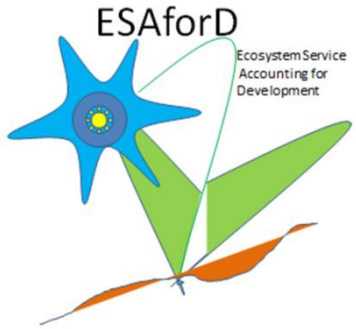


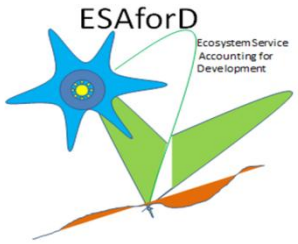
Ecosystem Service Accounting for Development (ESAforD)

Jessica Alvsilver, Per Strömberg

Swedish EPA

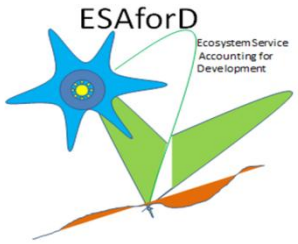
PTEC meeting Washington October 2

PTEC meeting



- ”Given the objective, resources and constraint of the program which challenge would you address and research approach would you select for the program”?

ESAforD



- Four year Sida financed program, started September 2014
- Collaboration between Swedish EPA (Environmental Economics Unit), Environment for Development Initiative (EfD) and WAVES.

Watch a live stream of the world's leading climate researchers discussing future paths for climate research

The IPCC 5th Assessment Report is coming to a close. EfD will live stream the world's leading climate researchers discussing future paths for

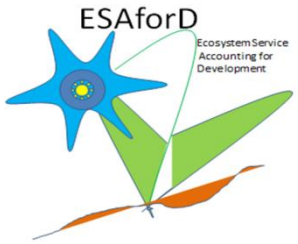
EfD researcher appointed as member of the "National Commission of Lithium" in Chile

EfD researcher, Carlos Chávez, NENRE-Concepcion, has been appointed by the Chilean Government to collaborate as a member of the "National Commission of Lithium" ("Comisión del Litio", by its name in Spanish).

Yonas Alem on Sustainable Development

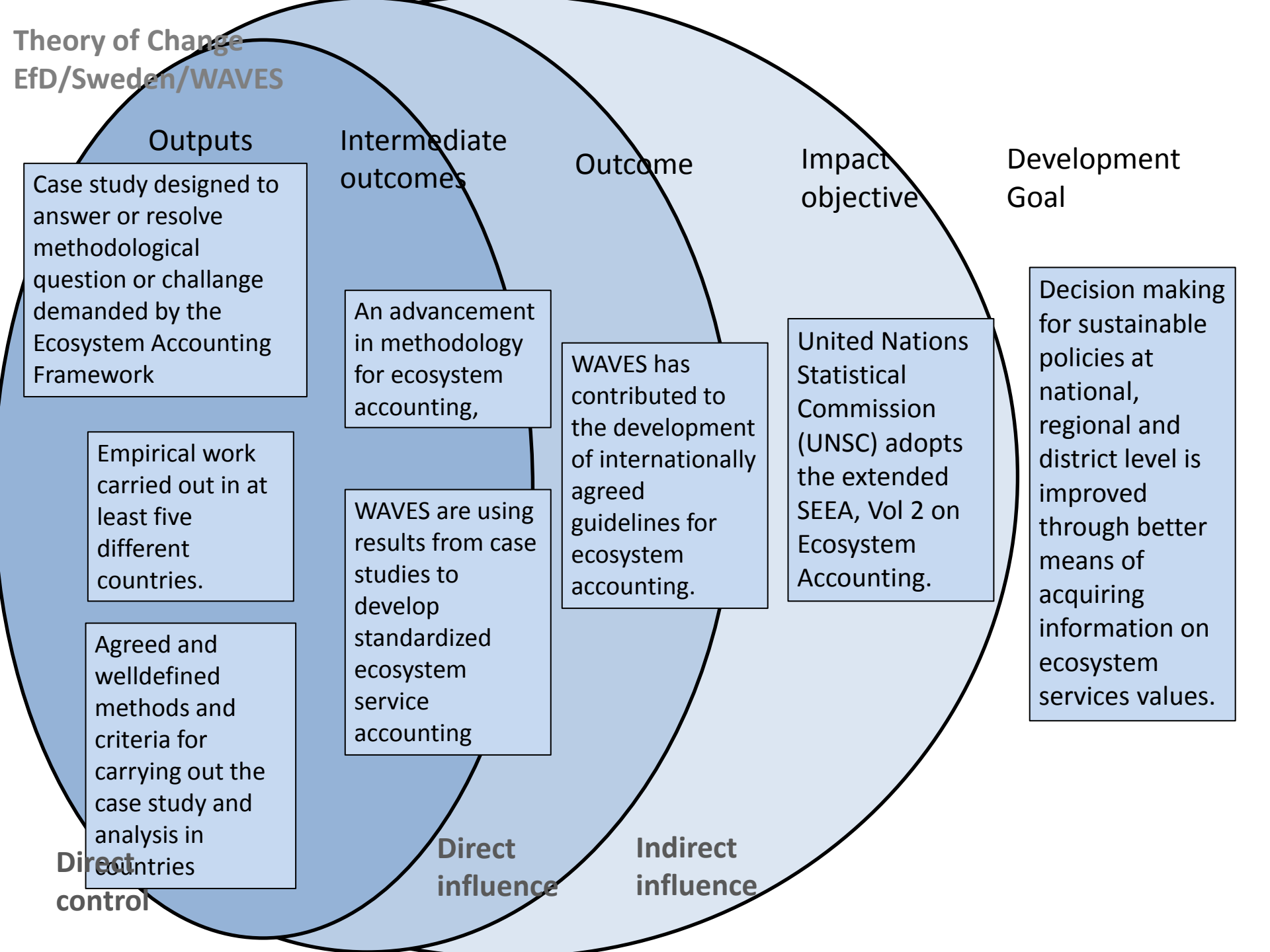
In less than two minutes research fellow Yonas Alem spreads the word of University of Gothenburg, the Environment for Development initiative, and research related to sustainable development. Check out the video from the IGC Growth Week 2014 at the London School of Economics and Political

EfD

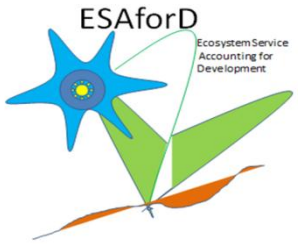


- Research program in environmental economics that focus on research, policy advice, and teaching
- Centers situated in South Africa, Tanzania, Kenya, Ethiopia, Costa Rica, Chile and China.

- Se http://www.efdinitiative.org/


Theory of Change
EfD/Sweden/WAVES
Outputs
Intermediate outcomes
Outcome
Impact objective
Development Goal
Case study designed to answer or resolve methodological question or challange demanded by the Ecosystem Accounting Framework
Empirical work carried out in at least five different countries.
Agreed and welldefined methods and criteria for carrying out the case study and analysis in countries
An advancement in methodology for ecosystem accounting,
WAVES are using results from case studies to develop standardized ecosystem service accounting
WAVES has contributed to the development of internationally agreed guidelines for ecosystem accounting.
United Nations Statistical Commission (UNSC) adopts the extended SEEA, Vol 2 on Ecosystem Accounting.
Decision making for sustainable policies at national, regional and district level is improved through better means of acquiring information on ecosystem services values.
Direct control
Direct influence
Indirect influence

ESAforD Framework



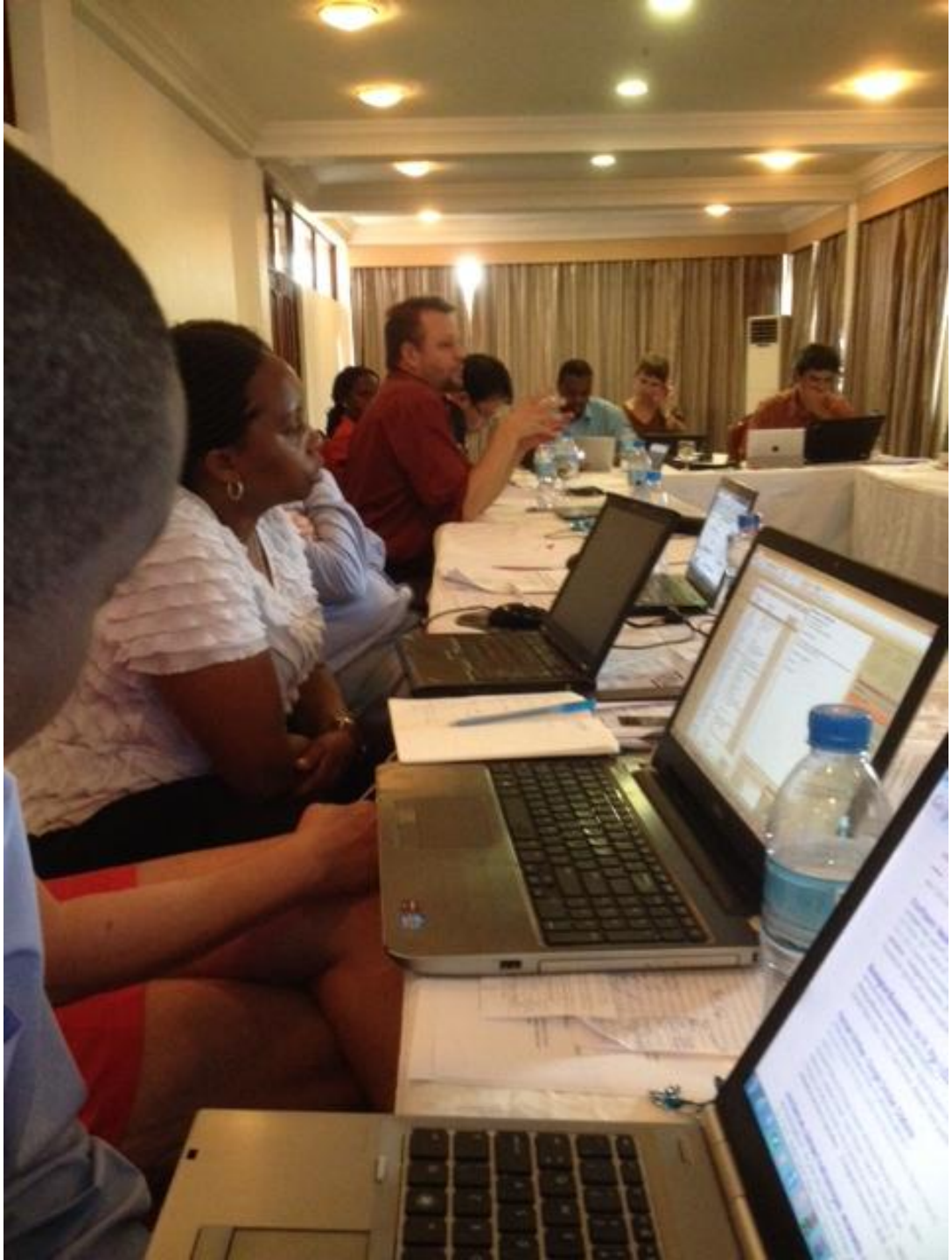
- *Output:* Through multicountry empirical work address a challenge or methodological issue identified by the experimental ecosystem accounting framework-methodological progress
- *Resources:* Seven countries, seven economist (postdocs) for three years
- *Constraints:* four year in total, fieldwork approximate 1,5-2 years, mainly economic competence.

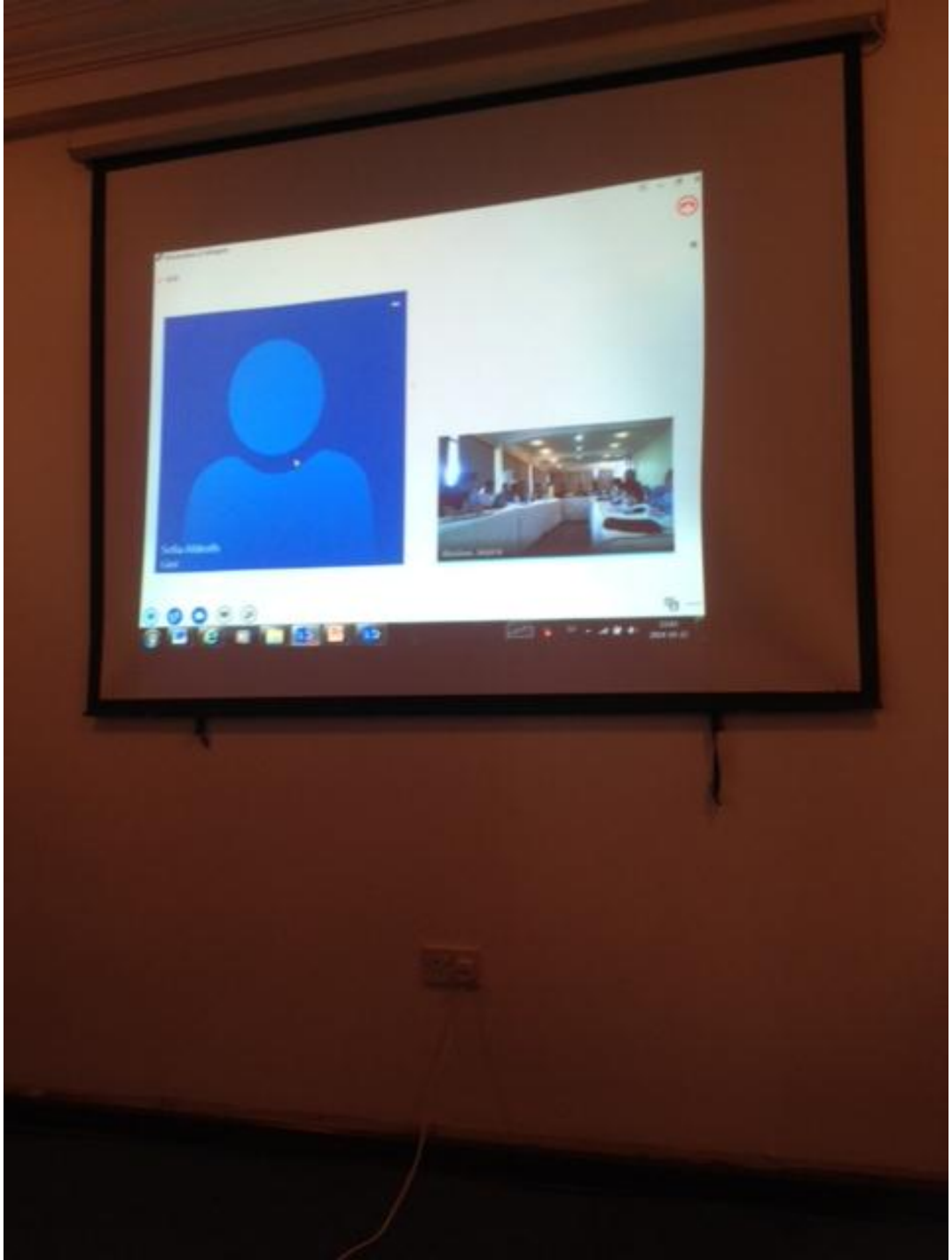
cont. ESAforD framwork

- Communication framework includes at least two meetings per year, WAVES and EfD annual meeting.
- Co-ordinated by Swedish EPA

How far have we come?

- Produced a background paper addressing challenges
- Presented and discussed in Dar es Salaam last week.
- 20 participants
- Discussed and narrowed down the research question.





Outcomes of the workshop

- Address the challenge of scaling up and comparing different methods for the same ES
- Value Transfer Validity testing in a multisite, multicountry setting
- Restrict analysis to regulating services
- Select service after feasability study
- Use existing biophysical models, INVEST, SWAT..
- Accept that we should only use valuation methods that are consistent with the accounting principles

Value transfer validity testing in a multi-site multi-country setting

Explorations to reduce transfer errors

- Case study 1: Comparing **different methods** for same ES
- Case study 2: **Scaling up**
  - Case study 2.1: **Primary studies** for scaling up
- The following presentation focuses on two options :
  - **Primary** studies to derive benefit function (Case study 2.1),
  - **Econometrically** derived benefit function (Case study 2).
  - Separate or combined across countries

Aim of the study

Explore ways to:

- Reduce the **transfer error** when scaling up.
- Enable value transfer to **countries that lack valuation studies**.

Possible contributions

a) Enhanced understanding of how **choice of parameters** such as valuation method, transfer method, data and scale can be exploited to **reduce transfer errors**, when **scaling up** values of the benefits that ecosystem services provide (intra and cross country)

b) **SNA** consistent

c) **Meta** study of standardized multi-country studies

d) Other?

Choice of ES, and choice of source ecosystem

- Probably **water regulating ES** (quality, erosion control, flow, supply)
- Same ES, **from the same ecosystem** (e.g. forests) or from different ecosystems (mangroves in one country, forests in another).

Approach of the research

Table 1: **Illustration** of Case study 2.1: value transfer from **primary** studies.

	Field site nr.	Field site 1	Field site 2	Field site 3	Field site 4
Local	Field site **characteristics**, e.g.:				
	-Ecosystem **location**	Upland	Upland	Lowland	Lowland
	-Ecosystem **type** (same?)	Wetland	Wetland	Mangrove	Mangrove
	-Ecosystem **service** (same)	Sediment control	Sediment control	Sediment control	Sediment control
	Methods				
	1.Best precision method (production function) to derive best available benefit function for each field site (biophysical, socio-ec.).	x	x	x	x
	2.Second best precision method (e.g. replacement cost).	x	x	x	x
	3.Value transfer from Method nr. 1 and 2. Assess which parameter values reduces transfer errors (within country).	E.g. from site 1 to sites 2, 3, 4			
Cross country	4.As in 3 above, but cross country.	Between e.g. same ecosystem location, and/or same ecosystem type, between data rich to data poor countries.			

Table 2. Case study countries.

Country nr.	1	2	3	4	5	6	7
Country	Chile	China	Costa Rica	Ethiopia	Kenya	Sweden	Tanzania

The diversity of the countries allows to **assess impact on transfer errors** of different data rich, data poor etc. etc.

Lastly:

5. **Regression meta** study (multi-country).

Parameters (1): choice of parameters

How can the transfer error be reduced by varying:

- **Valuation** method (different cost based methods etc.)
- **Value transfer** method (point value, function, structural?)
- Level of detail of **data** (primary data, secondary data, for reference and for target site of scaling up)
- Level of **scaling**: e.g. sites in different countries but with similar characteristics.
- **Other**?

Paremeters (2): Combining parameters

Table 3; **Illustration** of how parameters can be altered in conjunction with other parameters, to explore ways to reduce transfer errors (other examples **data**, **scale**)

Transfer method / Valuation Method	Unit value transfer	Benefit function transfer	Meta-analysis function transfer
Production function			
Damage cost avoided			
Replacement cost			
Restoration cost			

Further thoughts

- **Meta** regression study of 4 field studies/country.
  - Contribution as a controlled experiment?
  - **Risky** (econometrics on small number of observations).
  - => Fall back position other meta approach to use all the case studies.

- If opt for **Biophysical** modelling: strategies for assuring sufficient quality subject to project budget.
  - **Tools** (e.g. Invest?)
  - Choice of **ES:** biophysics more demanding in flooding modelling than water quality/sedimentation?
  - **Other?**

- **Scale** of:
  - Reference sites for the value transfer (e.g. small local or small catchment, maybe lower cost with larger scale if enables **GIS**?),
  - Target sites for the value transfer (e.g. local instead of regional level?)

- Explore **twists** to the country studies: CC, gender (especially if if takes little time)

- Strengths and weaknesses of deriving benefit functions **directly**, or, **indirectly**?

Table 4: Comparison of potential research approaches.

Country study approach	Interpretation (For country studies and meta study)	Transfer error testing		Doable with the available project resources		Additional human resources (relates to incentives for human resources for academics at EfD centers)
		Parameters to assess	**Precision** of transfer error testing	Human resources	Data	
2.1 Field studies (up to 4)	Low representativity? Lack statistical validity	1.Valuation method 2.Transfer method 3.Data 4.Scale 5.Other?	Detailed primary data? (production function)?[c] Invest non-precise on single ES?	Natural science focused?	**Much primary data**	Publishability of country studies? (lowers likelihood to attract permanent staff at EfD centers; MSc students from universities)?
2. Econometric derivation of benefit function (e.g. Vincent Malaysia)	**High representativity** **Statistical validity**	1.Valuation method 2.Transfer method 3.Data 4.Scale 5.Other?	Rely on theory to determine unbiased vs biased methods.	**Economist focused**	Necessary secondary data not available? (some countries) Insufficient data quality? (some countries)	High **publishability** of country studies? (econometrics)

- Option: Combination of approach 2 and 2.1

(e.g. inserting primary study estimates as controls in econometric scaling up) for testing transfer errors across methods.

Which publications?

Explorations to reduce transfer errors in scaling up the value of ecosystem services.

Implications for cost savings.

- 7 country studies (differerent land characteristics, possibly different methods)
- 1 meta study (cross country)

Best use of the project resources?

A large project: **what would you do with such a project**?

- Simple optimization model based on meta regression: to guide choice of parameter values in order to minimize transfer error, cost of doing the study, and both (e.g. valuation method, transfer method, data, scaling). As one contribution to guide future scaling up exercises?

Project profile

- Project team: EfD centers in program by Gothenburg University, SEPA Environmental **economics** in low/middle income countries)
- **Method development** of valuation of ES in a SNA setting.