



Mitigation Options for Nutrient Reduction in Surface Water and Groundwaters

COST action 869

Working group 3 meeting

Evaluation of (potential) mitigation options at different scales

Conceptual framework

Actions regarding the database and factsheets of mitigation options

Austria, Waidhofen, 21 May 2008

Oscar Schoumans

(Wageningen University and Research Centre, Alterra)



What happened so far

- 2006** Questionnaire about mitigation options (research, implied legislation, new ideas)
- 2007** Overview of P legislation within European Countries (presented in Hamar during WG1 meeting)
- 2007** Nov: Devon: 1st Working Group 3 meeting
- Gathering information on potential mitigation options (overview what was/is going on in different countries)
 - Discussion about building a framework where different mitigation options fit in.



Devon: Conclusions

- We shared information about the effectiveness of different mitigation options
- We concluded that we had to write factsheets about different type of mitigation options with information about results from different countries
- We discussed the need / importance to set up a framework where mitigation options can fit in
- There are some major advantages to summarize this information
 - Reduce duplication of work
 - Data mining and sharing information and methodologies
 - Transferable information within EU
 - Get evidence about effectiveness in relation to geographical circumstances and scale issues



Devon: Conclusions

- We discussed which aspects are important in relation to setting up and filling in such a frame work:
 - Processes
 - Source, soluble, detachment, transport/pathways, connectivity, impact
 - Scale
 - Field, farm, catchment, river basin, national
 - Land use
 - Dairy, arable, etc
 - Time scale
 - Short term vs long term effectiveness
 - Site effects / swapping
 - Costs (country dependent)



What happened after Devon

2008: Amsterdam: one day small meeting; preparation Rome meeting

- Categories to structure the list of mitigation options
- Headings and structure for setting up factsheets
- Working sessions: working out the factsheets
- Agenda of the meeting in Rome



Categories & factsheets

Category	Number of factsheets (cluster of measures)
Nutrient management	18
Crop management	1
Livestock management	3
Soil management	18
Water management	10
Land use	0
Land infrastructure	7
Measures in surface water	3



Proposed factsheets headings

First drafts of factsheets:

- Description, incl. if effect is aimed on N / P / .. emission
- Rationale, mechanism of action
- Applicability
- Effectiveness, including (un)certainty
- Time frame
- Environmental side-effects / pollution swapping, e.g.
- Relevance, potential for targeting, administrative handling, control
- Costs
- References



WG3: Outcome Rome meeting (April 2008)

- We discussed the draft factsheets in several sessions
- We have put names to the factsheets (add more information / reviewers)
But all participating countries to respond on the factsheets !!!!! Because more information should be put in regarding the climatic regimes (N-S and E/M/W) and more information is needed about different soil types
- We ask WG4 for a session at the May meeting in Austria to talk about the conceptual framework and the ongoing work on the factsheets
- Information should be made available via e.g. website / discussions options via wikipedia?



And here we are (summary)

- 2006 Questionnaire about mitigation options in Member Countries
- 2007 Overview of P legislation within European Countries
- 2007 Nov Devon: 1st Working Group 3 meeting
- *Gathering information on potential mitigation options*
 - *Relevant aspects of a conceptual framework*
 - *Need of setting up factsheets*
- 2008 April Rome: 2st Working Group 3 meeting
- *Discussion about the draft factsheets: www.cost869.alterra.com*
 - *Short discussion how to go on building a framework where different mitigation options fit in*
- 2008 May Waidhofen: WG3 session at Working Group 4 meeting
- *First proposal for a conceptual framework (Oscar)*
 - *Ongoing aspects regarding the factsheets (Wim)*



COST 869 – WG3 Waidhoven 21 May 2008

Proposed Agenda for today

- 9:00 – 9:15 Overview of the status WG3 ✓**
- 9:15 – 10.30 Proposal conceptual framework and discussion (Oscar)**
- 10:30 – 11:00 Coffee/tea**
- 11:00 – 12:00 Factsheets (Wim Chardon)**
- 12:00 – 12:15 Conclusions of this WG3 session**
- 12:15 – 12:30 Next WG4 meeting in 2009 (Joseph Blum)**
- 14:00 Afternoon trend analysis by Brian Kronvang**



Measures \leftrightarrow Categories \leftrightarrow FS \leftrightarrow Framework

Categories were defined in order to cluster more than 100 measures

Nutrient management

Crop management

Livestock management

Soil management

Water management

Land use

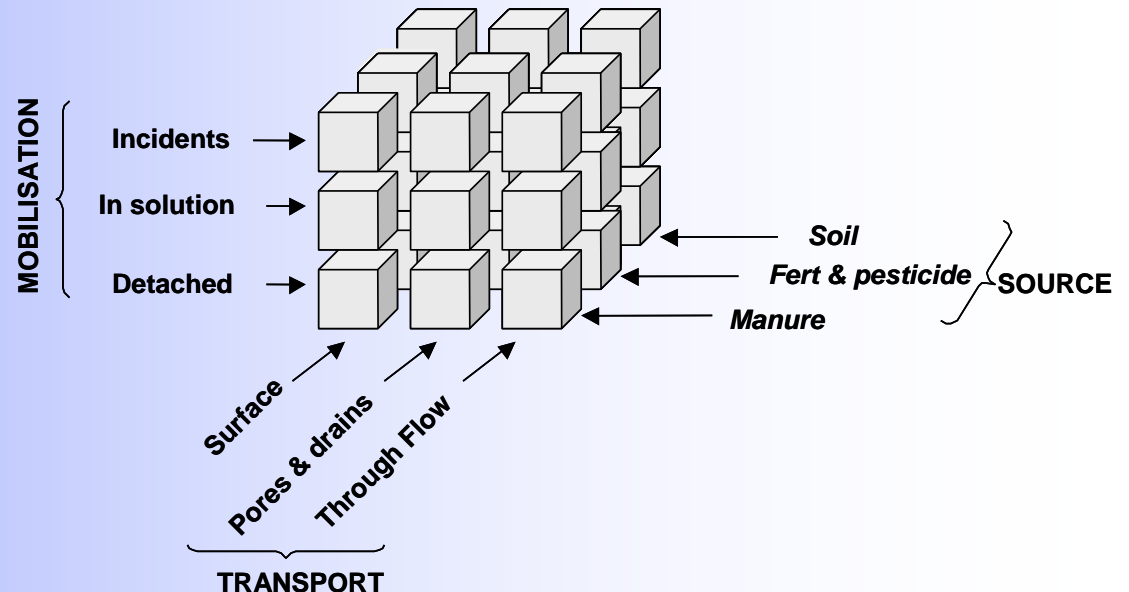
Land infrastructure

Measures in surface water

Devon: Important aspects in relation to setting up and filling in the conceptual frame work

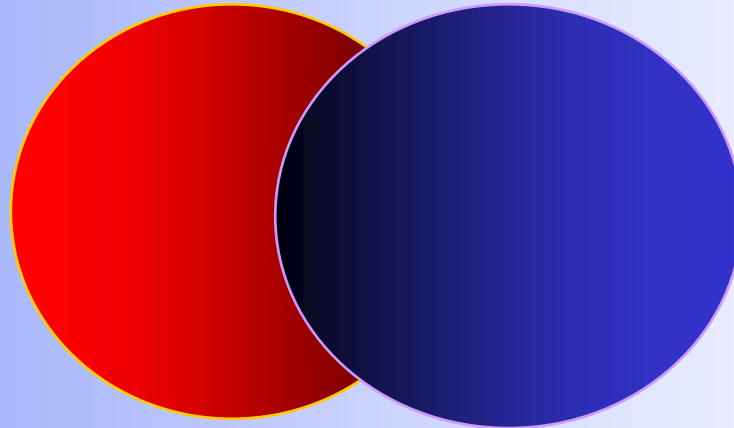
- Processes
- Source, soluble, detachment, transport/pathways, connectivity, impact
- Scale: Field, farm, catchment, river basin, national
- Land use / Dairy, arable, etc
- Time scale
- Short term vs long term effectiveness
- Site effects / swapping
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Information is available in the FS



P losses: conceptual framework

C_p
(mg P/L)
(mg P/kg)



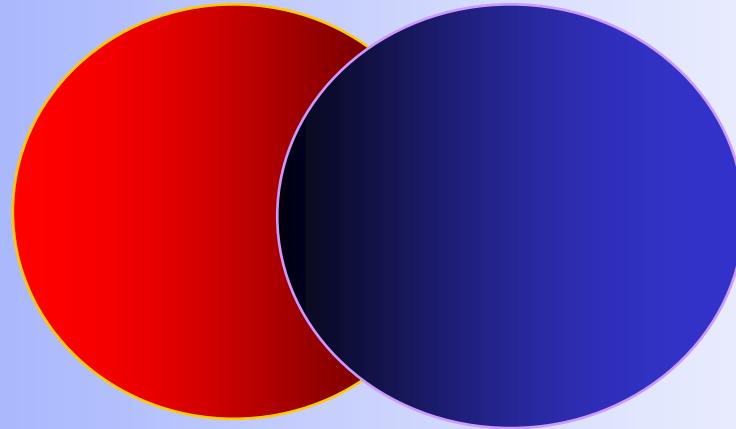
$J^v = \text{Flux}$
mm/yr

$$P_{\text{load}} = \sum J^v * C_p (\text{Diepte})$$



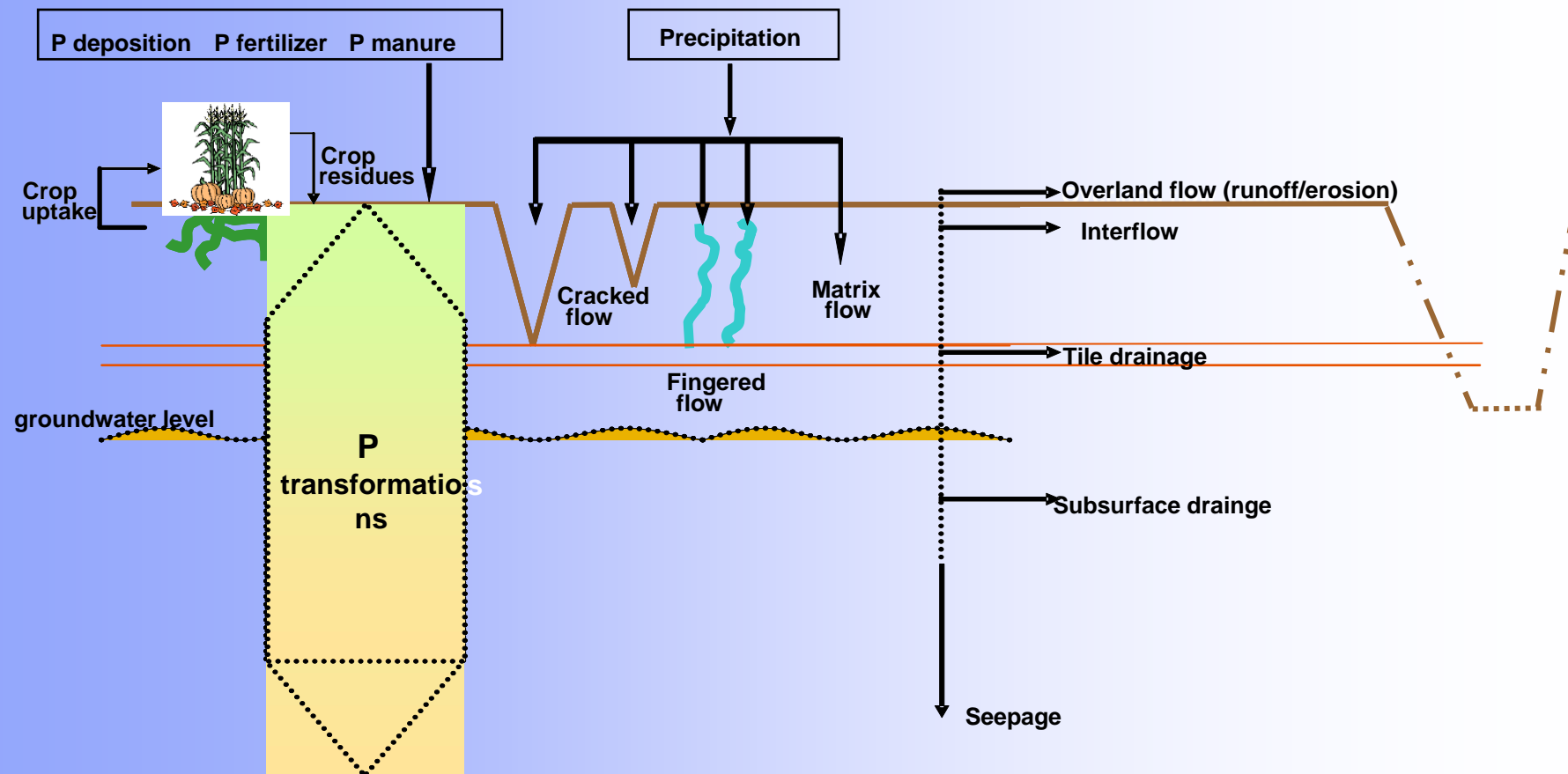
P losses: conceptual framework

Sources



Transport

P losses: conceptual framework

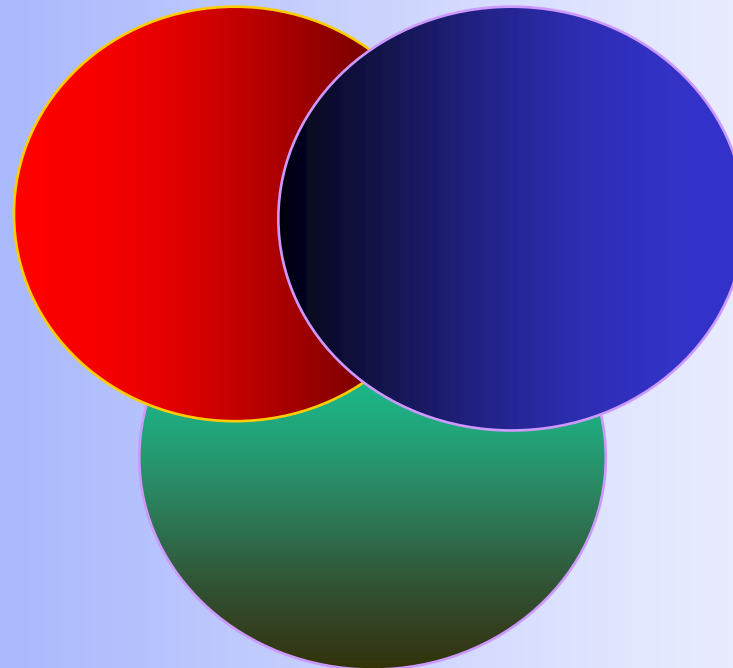


(Schoumans en Chardon, 2005)



Conceptual framework

Sources

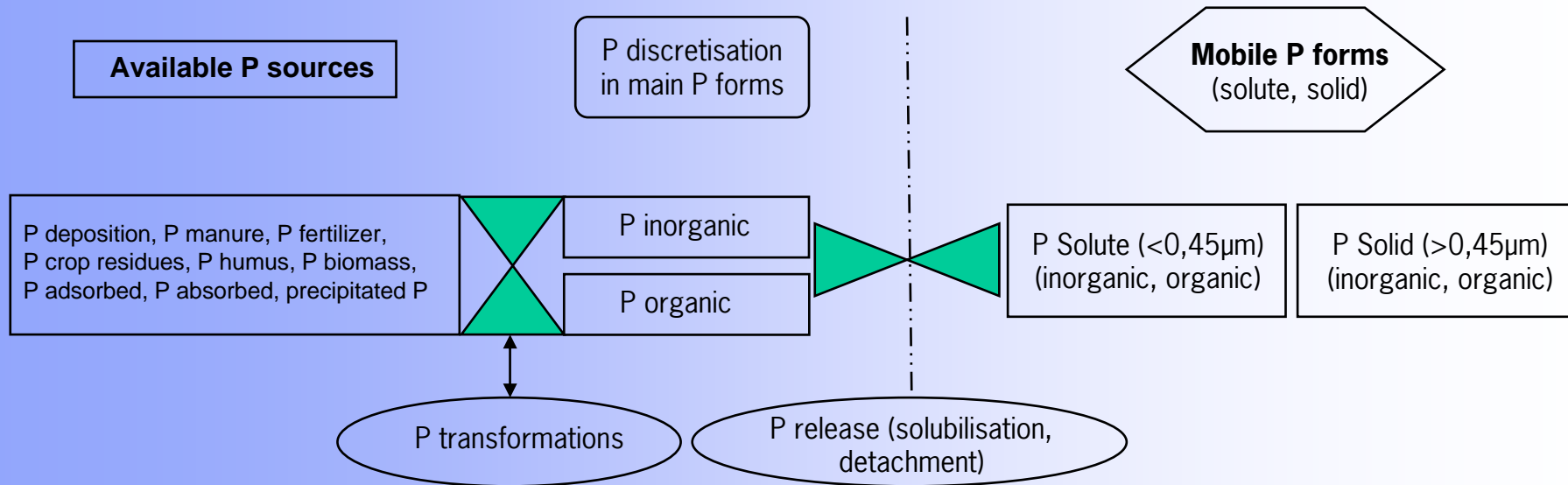


Transport

Connectivity

Document: Draft has been sent around last week

Conceptual framework: Sources



Conceptual framework: Transport

Water sources

Discretisation
in main pathways

Precipitation and upward seepage

overland

interflow

tile drainage

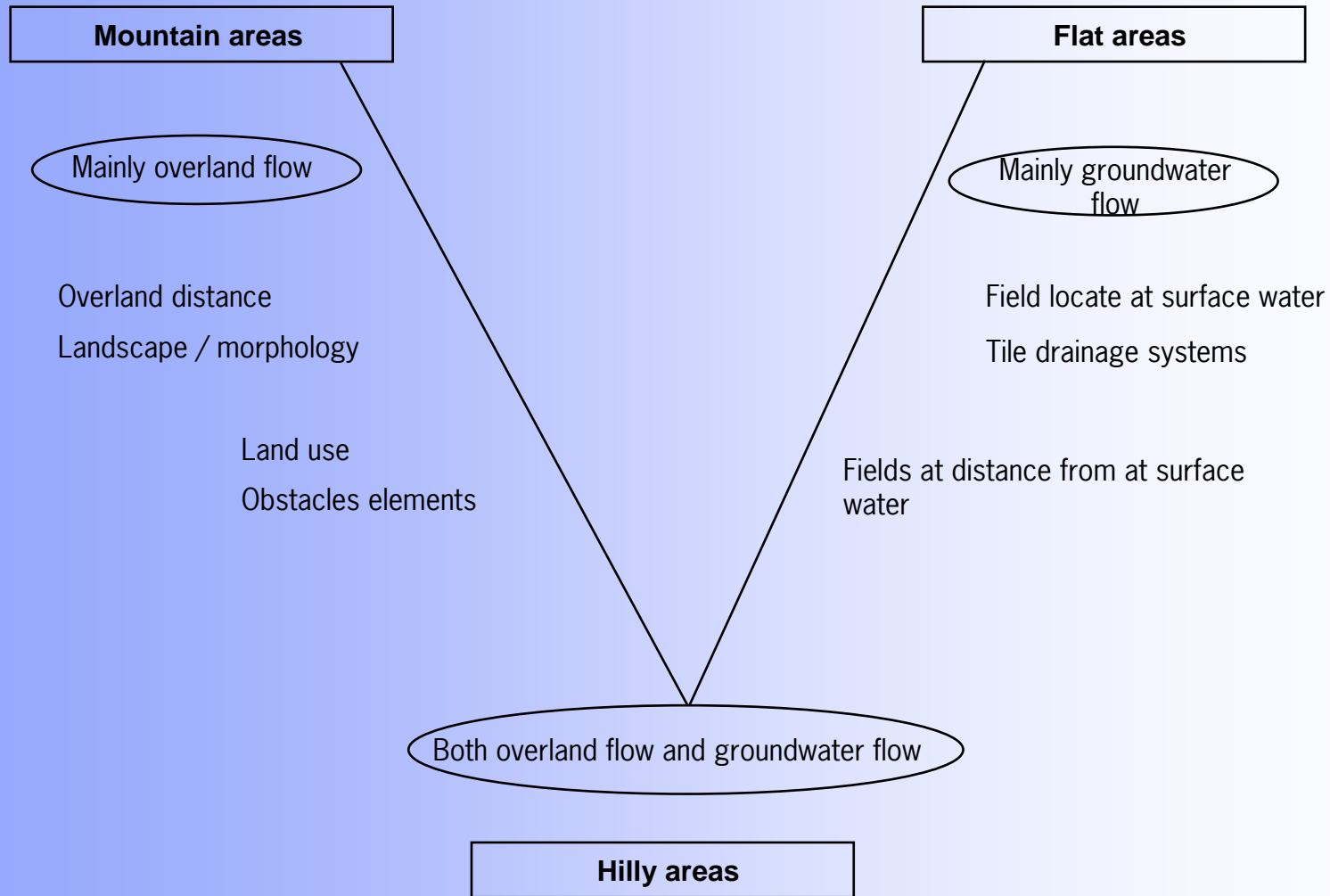
subsurface drainage

seepage

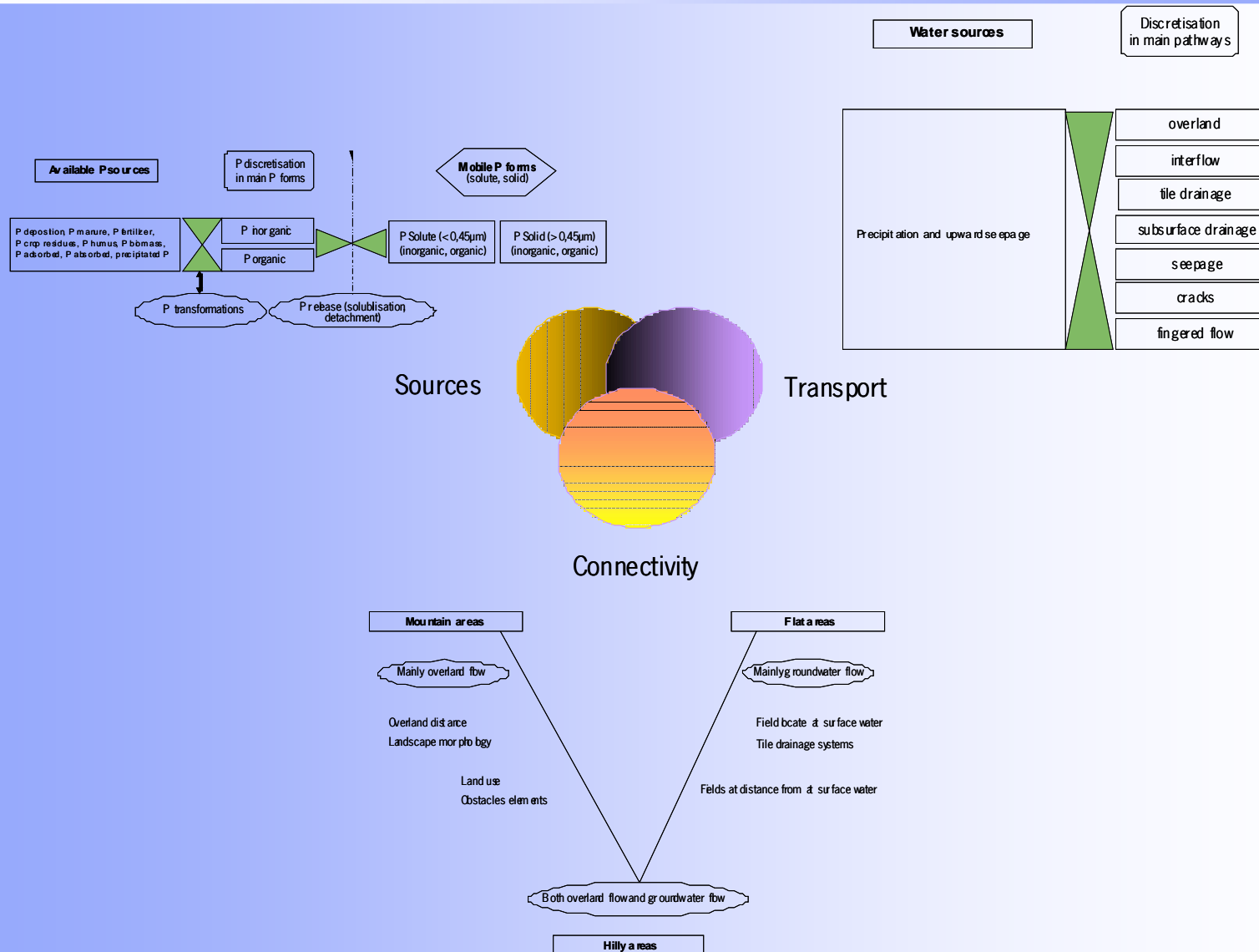
cracks

fingered flow

Conceptual framework: Connectivity



Conceptual framework





Conceptual framework & Factsheets

Measure

P sources and P release										Transport and pathways						Connectivity								
Available P sources										P discr		P mob								mountain		flat		

Name 1
Name 2
Name 3
Name 4
Name 5
Name 6
Name 7
Name 8
Name 9

Dep	Fert	Manure	Crop res	Biomass	Ads	Abs	Prec	Org	Intorg	Soluble	Solid	overland	interflow	tiles	subsurf	seepage	cracks	fi flow	over/D	Morpho	land use	obstacles	located at SW	tile drains	at distance from SW
	x				x				x	x		x							x						

tabel

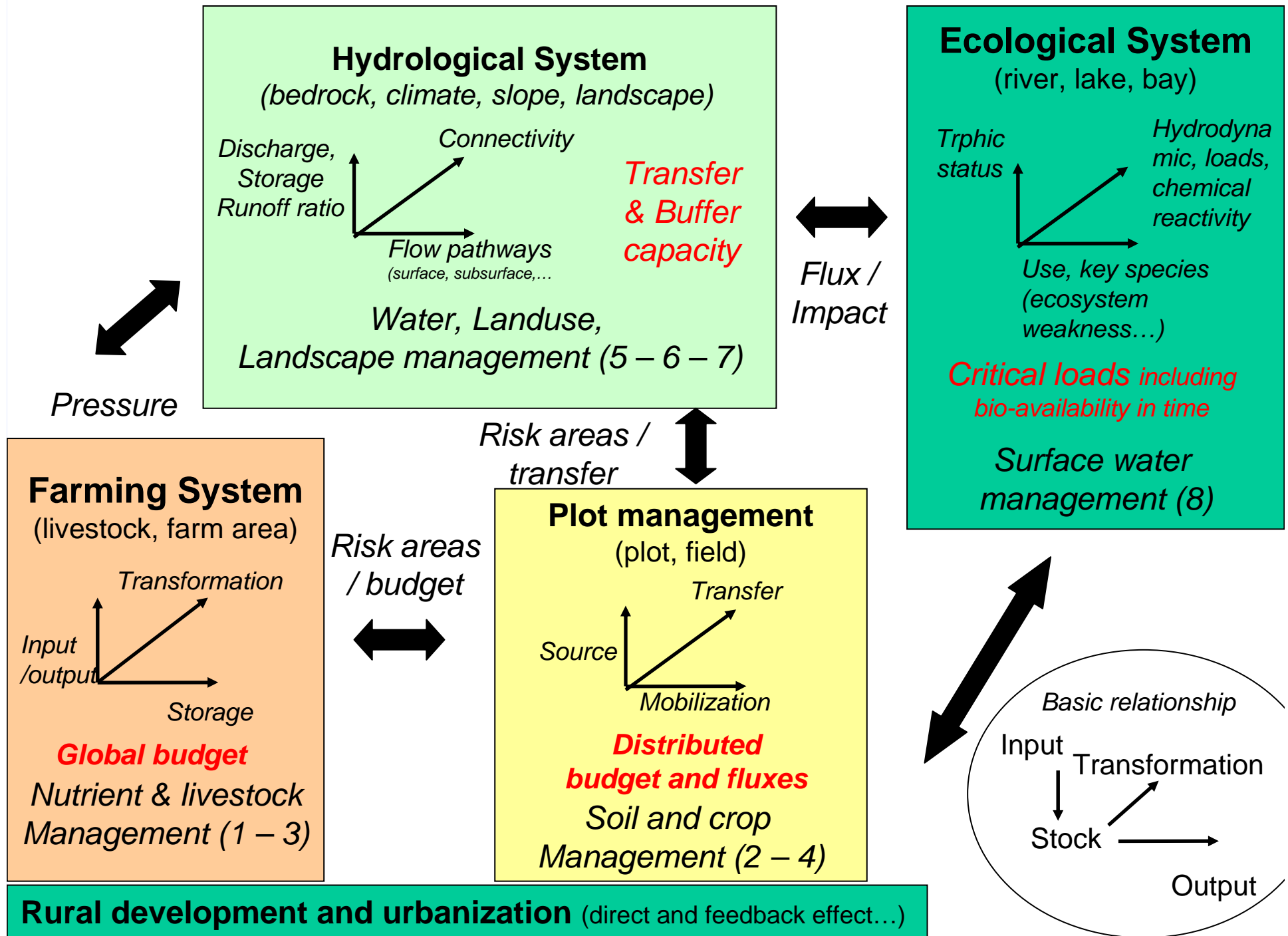


Conceptual framework

Suggestions?

Another scheme / option

→ Chantal Gascuel & Jean Marcel Dorioz





Conceptual framework

Questions?

Suggestions?

Will this help us?