Coupling actors, methods and issues for socio-environmental change and governance:

The CoOPLAaGE Approach

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UMR/JRU G-EAU Managing Water, Stakeholders & Uses

IRSTEA : French National Institute for Research and Technology on Environment and Agriculture - Montpellier, FRANCE

Pour mieux affirmer ses missions, le Cemagref devient Irstea

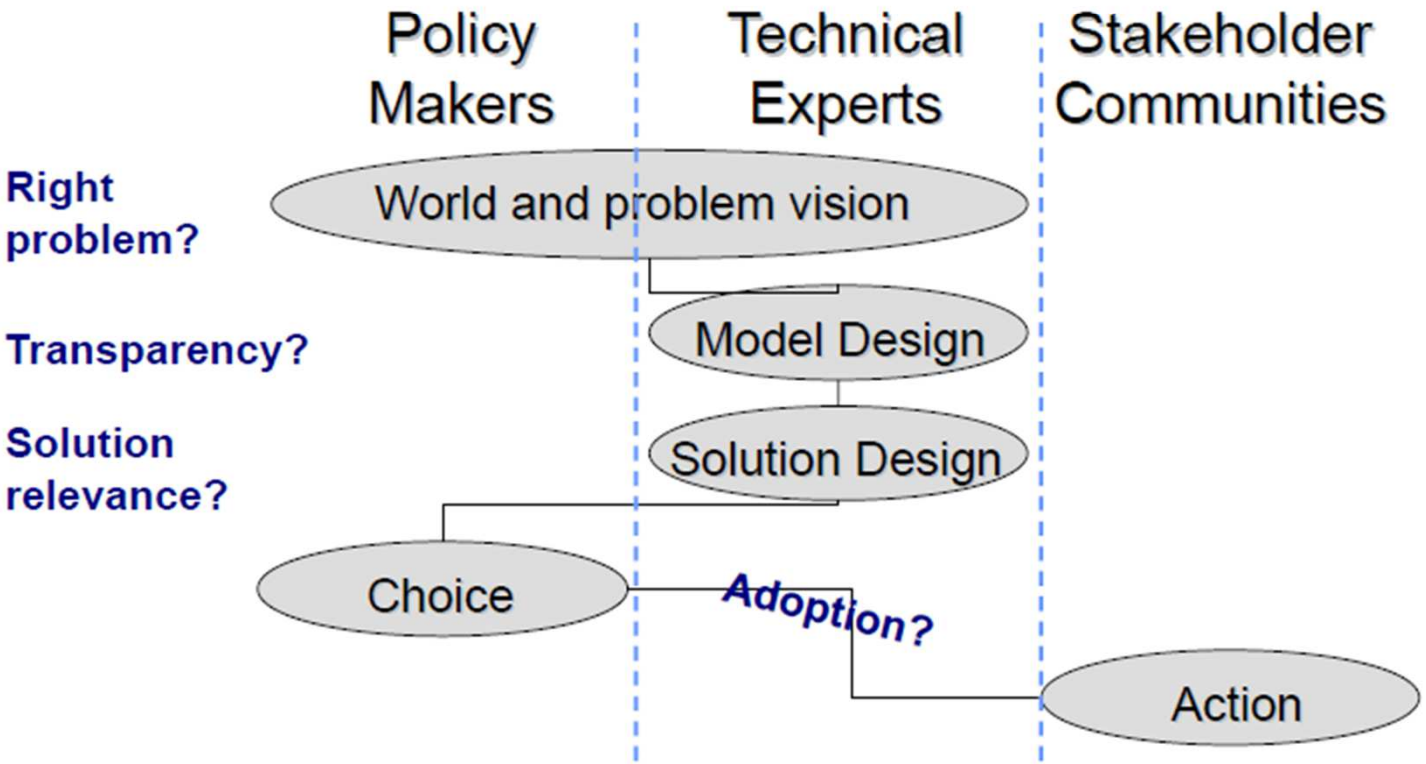
www.irstea.fr

Founding Principles

1. A robust apparatus coupling participatory methods, designed and used in various countries (110 listed cases) to support Socio Environmental change
2. (Multi-) Integration to cope with complexity: actors, stakes, scales, methods, disciplins…
3. « Let them » manage their own process (via transfer, a pro-autonomy posture and minimal intervention)
4. A grounding participatory modeling paradigm: « *Yes,* they *can model* » *to explore and change their own pathway in a complex environment*

From the classical approach…

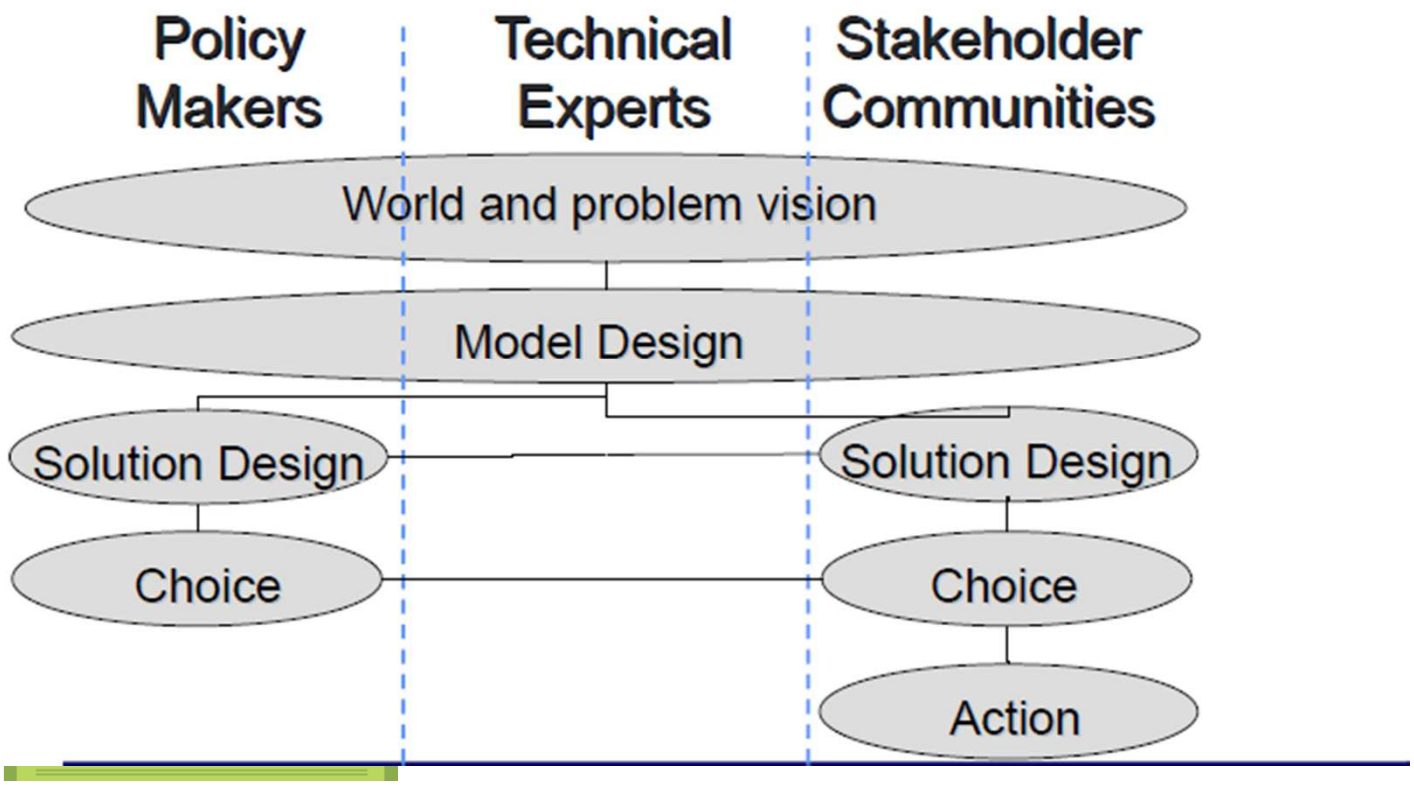
1	A solution is provided to a pre-defined problem and participants can "adapt and adopt it", with relevant support and incentives



… to multi-level participation

4 A protocol and tools to support model elicitation and design are provided to reach an agreement on shared views of the issues, situation, options, strategy and implementation

Typical of participatory modelling approaches



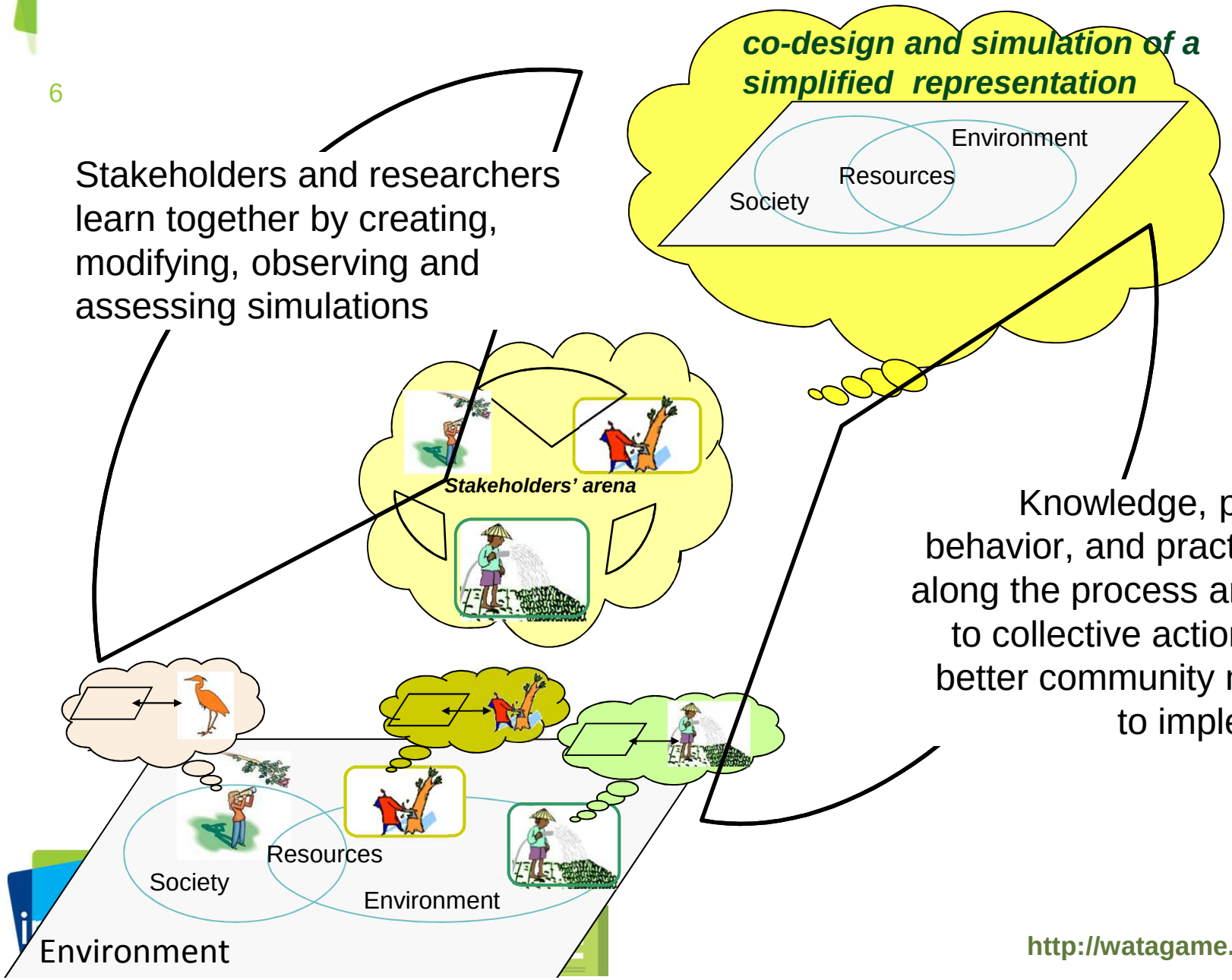
Background & History (1993-…)

ComMod Companion Modeling (Bouquet, Barreteau, D'Aquino, Etienne, … - 1998)

www.commod.org = **participatory modeling** + role-playing game & computer simulations (multi-agent) to co-explore complex systems behaviors and management

Background: companion modelling

Stakeholders and researchers learn together by creating, modifying, observing and assessing simulations



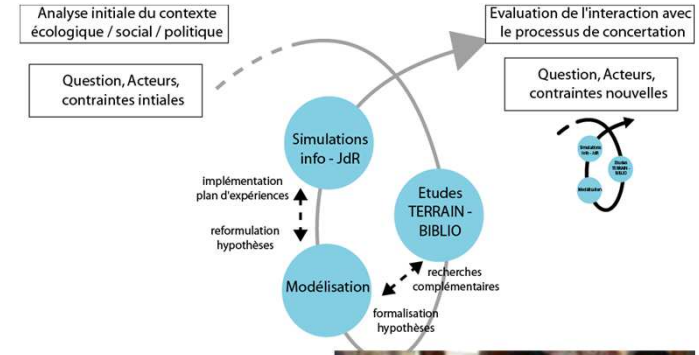
Knowledge, perceptions, behavior, and practices evolve along the process and can lead to collective action plans and better community mobilization to implement them

Background: companion modelling -→ The Wat-A-Game kit

- GEAU and ComMod experience : simulation tools for water management support (Role-Playing Game + Computer Models)
  - How to capitalize ?

- « Upscaling Commod » : a working group (2008-2009) of UMR G-EAU (Ferrand, Farolfi, Abrami)
  - Assessing different approaches for upscaling in spatial and institutional scales the Companion Modelling processes
    - Propagating process to higher level stakeholders
    - Extrapolating results
    - Opening to large groups with Internet
    - **Using abstract tools**
    - **Transfering process to local partners**

- Providing infrastructure to speed up and ease design of RPG
  - Easy to transfer : fast learning / no computer
  - Physical visualization of water
  - Able to address multi-level governance any kind of catchment



Wat-A-Game (WAG)
A toolkit for participatory modeling & role-playing games

→ « Let-them » model their own catchment on the table

→ Include their own roles, resources, activities, events

!!! Get a shared model (playable) of their hydrosocial system

→ INIWAG : introduction / discovery kit-bag

→ CREA-WAG : creative process, step by step

→ WAG-LIB : a library of past case studies (> 80)

→ INFO-WAG : knowledge management

→ INTER-WAG : computer support for edition

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CoOPLAaGE

http://watagame.info

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wat a game

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Pêcheur
Elevage
Gestionnaire

Background & History (1993-…)

www.commod.org

Companion Modeling (Bouquet, Barreteau, D'Aquino, Etienne, … - 1998)
= **participatory modeling** + role-playing game & computer simulations (multi-agent) to co-explore complex systems behaviors and management

- Development of the Wat-A-Game principle and kits (2004-)

- Engineering participatory processes (+ K Daniell)
- Multi-level adaptation processes (inclusion, coherency)
- Participatory planning (technical & non technical integration)
- Social Justice Research (+ Syme & Nancarrow)
- Social & Political impact evaluation
- Knowledge Engineering for SD policies (cf. UN-OSD expertise)

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PrePar

Preparing design of the decision process

Wat-A-Game

Modeling & role-playing-games

Just-A-Grid

Discussing justice principles

Encore-Me

Evaluating impacts

Cooplan

Building action plans

Scoolplaage

Learning by doing

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Gestion de l'Eau, Acteurs

http://watagame.info

A typical process

1 PrePar **Preparing a governance protocol**
Decide the principles and rules of the emerging participation process.

2 Just-A-Grid **Exploring Justice**
Discuss the social justice principles for sharing land and water.

3 Wat-A-Game **Creating a playable model**
Prepare a local model for participatory simulations of loca situation and new options.

4 Cooplan **Elaborating an integrated action plan**
Propose and structure actions, and then assess their coherency, feasibility and efficiency

5 Wat-A-Game **Testing and discussing plans**
Experiment the plan with the role playing game and validate a joint adaptation strategy.

6 Encore-Me **Monitoring and evaluation**
Learn about the changes in knowledge, preferences, actions and relations

CoOPLAaGE

e.g. Natural Resource Management in Africa (FP7 Afromaison 2011-2014)

Source: E. Hassenforder, 2015

Co-design the process itself
Share equity preferences

→

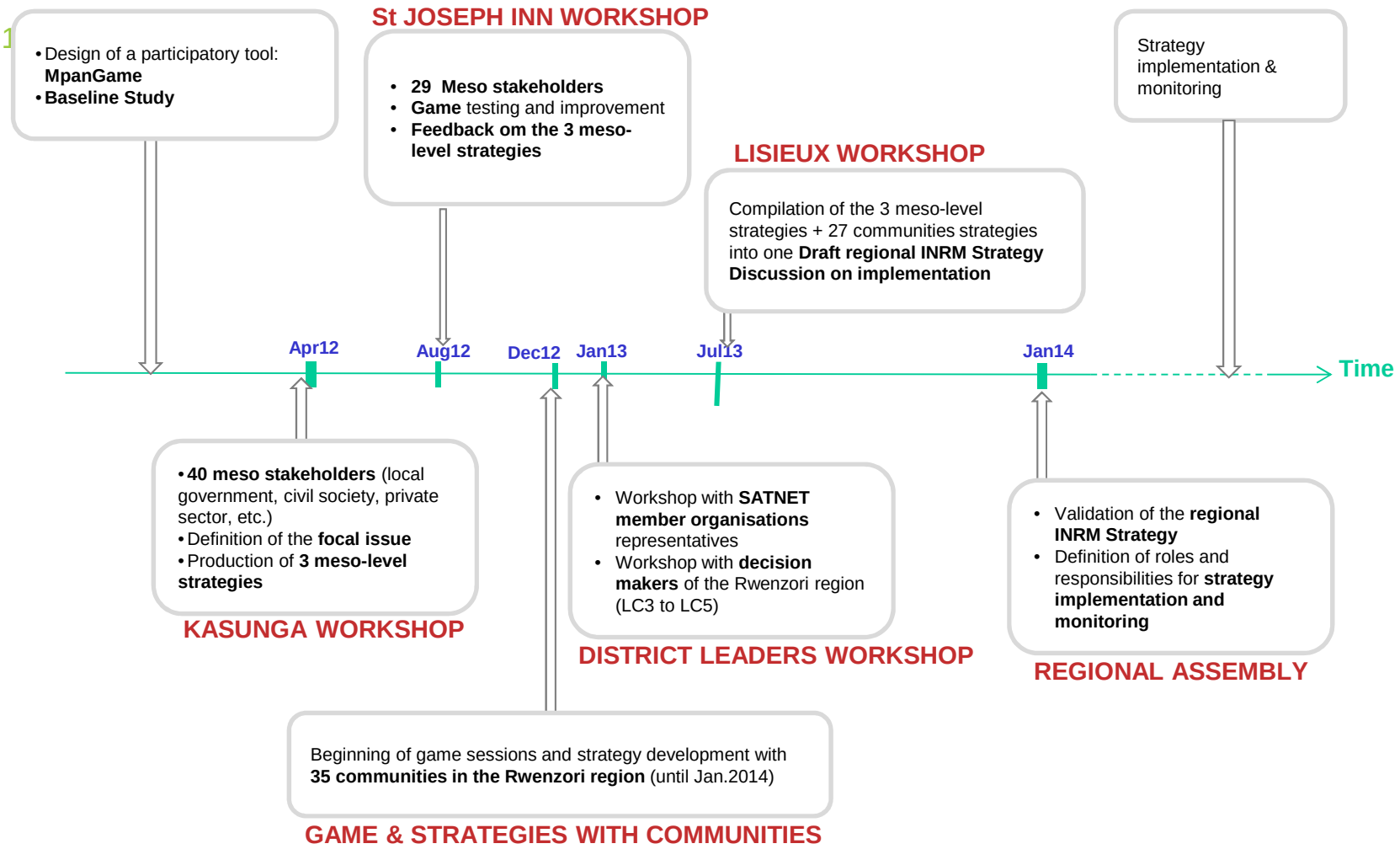
Propose actions
Build and assess integrated strategies

↔

Build own model
Simulate new actions and norms

http://cooplaage-intro.Watagame.info

UGANDA / SUMMARY OF THE PROCESS:



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SUMMARY OF THE STAKEHOLDERS INVOLVED

Stakeholders of the Rwenzori region from all levels:

From communities……to civil society……....to decision makers…….... to parliamentarians

35 communities

NGOs and CBOs

District leaders

His majesty
King of Tooro

Hon. Alex Ruhunda

MPAN'GAME

Through collective effort and commitment,
we shall manage the natural resources sustainably.

BAMUGISA
BASO
BETT
BUBANDI
BUDO
BUSARU
DEFORA
HOSFORD
IKONGO
KABECOS
KARUGHE
KDC
KIBOTA
KIIMA
KUOFA
KYEFA
KYONDO MIDDLE
NDONGO
NEW EDEN
NORACOL
TRAP
WREFI


District leaders, Kabarole


Nyabusoli, Kabarole


Kanyonza II, Kamwenge


Kyempara, Kasese


Bukangara, Kasese

" After this game,
I will go and plant more
indigenous trees and encourage
others to do so as well!
What will you do? "


Kigoyere, Kyenjojo


Regional group, Rwenzori


Kanyonza II, Kamwenge

MMU 0772540509 and SATNET 0782313068

AFROMAISON

http://www.mmu.ac.ug/
http://www.satnet.org.ug/
http://www.afromaison.net/
https://sites.google.com/site/waghistory/

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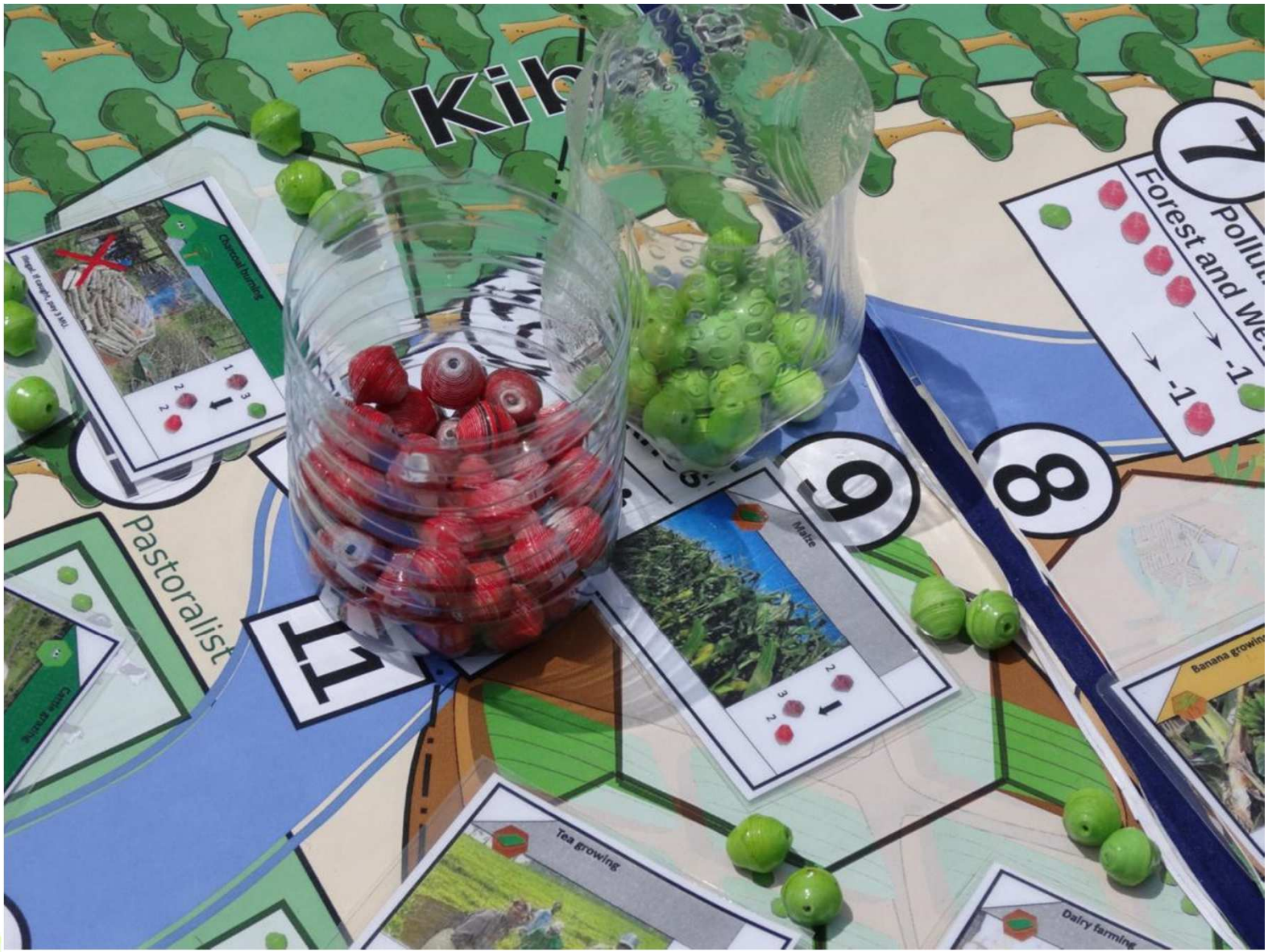
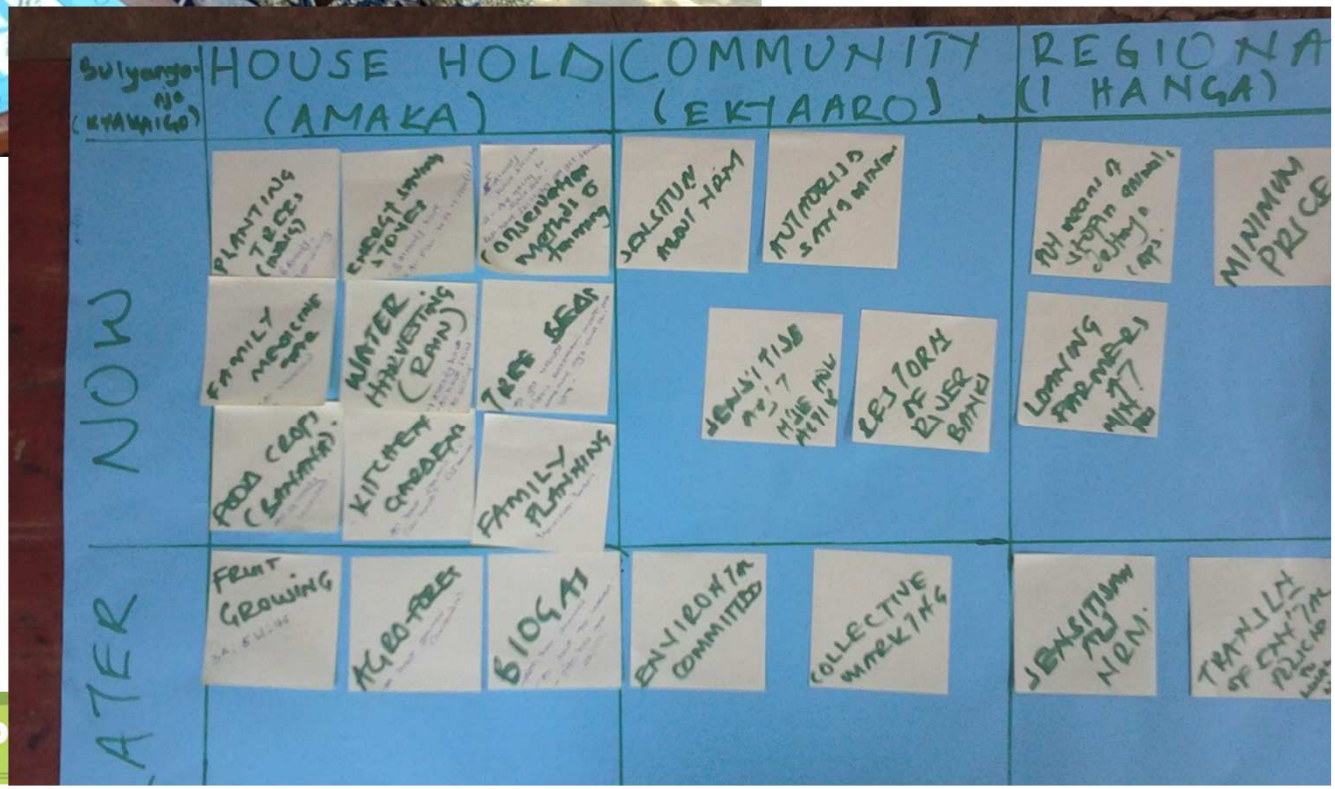

Pastoralist
Maize
Tea growing
Dairy farming
Forest and
-1
-1

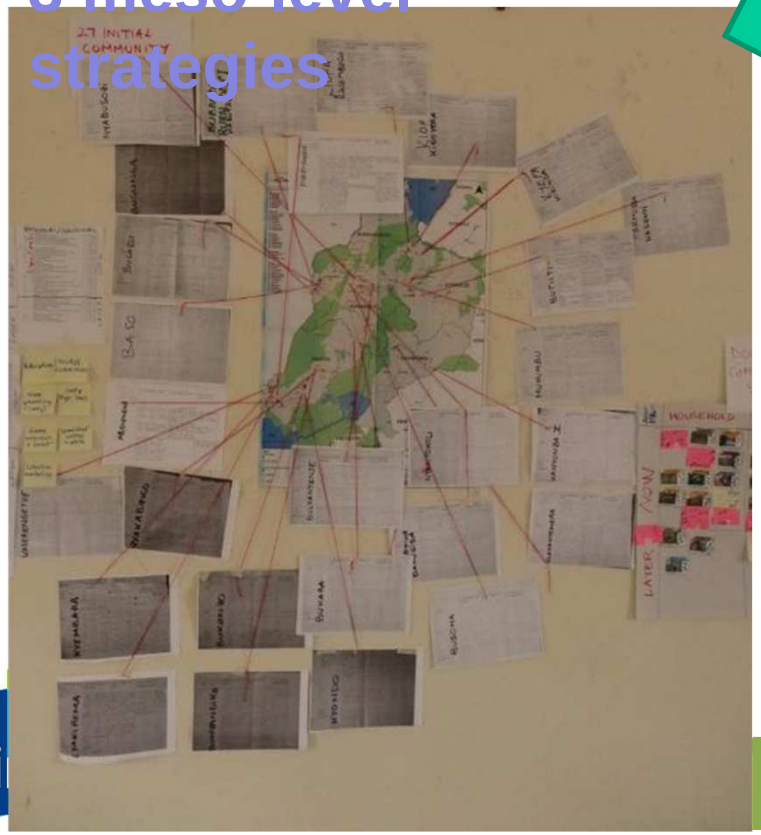

HOUSE HOLD
(AMAKA)
COMMUNITY
(EKYAARO)
REGIONA
(I HANGA)
NOW
FAMILY PLANNING
FRUIT GROWING
ENVIRONTA COMMITTEE
COLLECTIVE MARKETING
MINIMUM PRICE

Lisieux meeting – July 2013

27 communities strategies

+

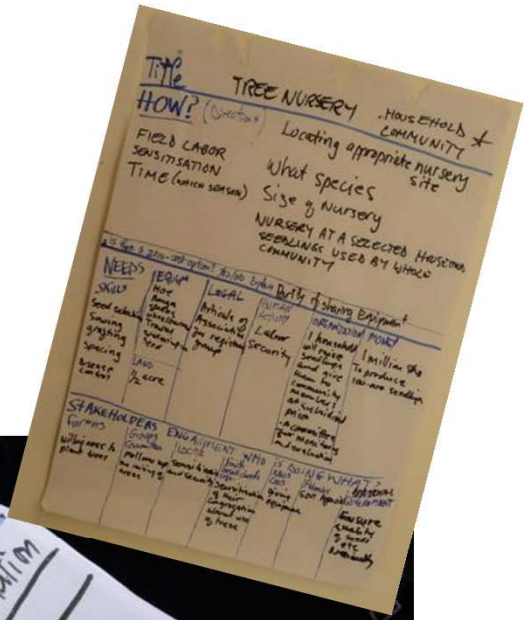
3 meso-level strategies



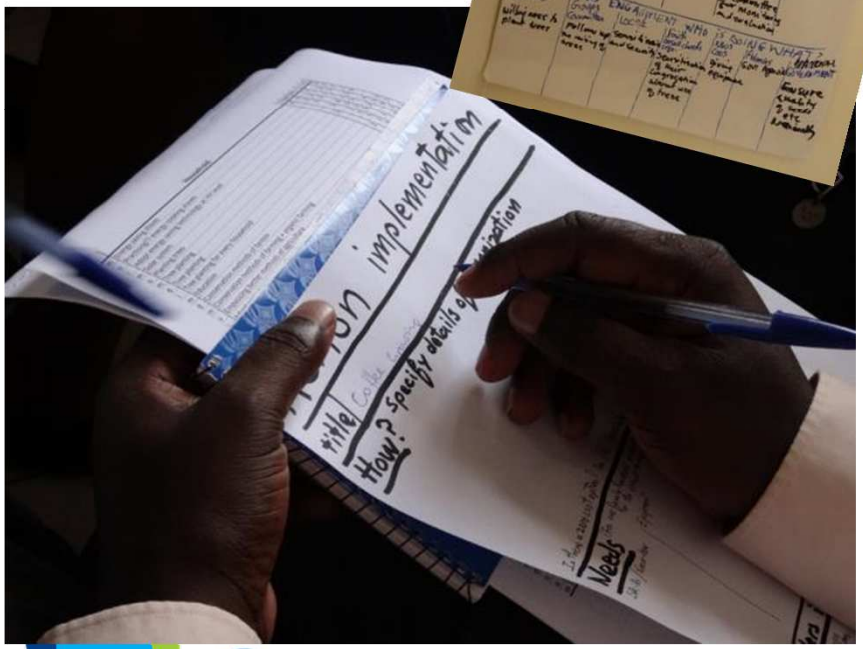
One draft regional INRM strategy

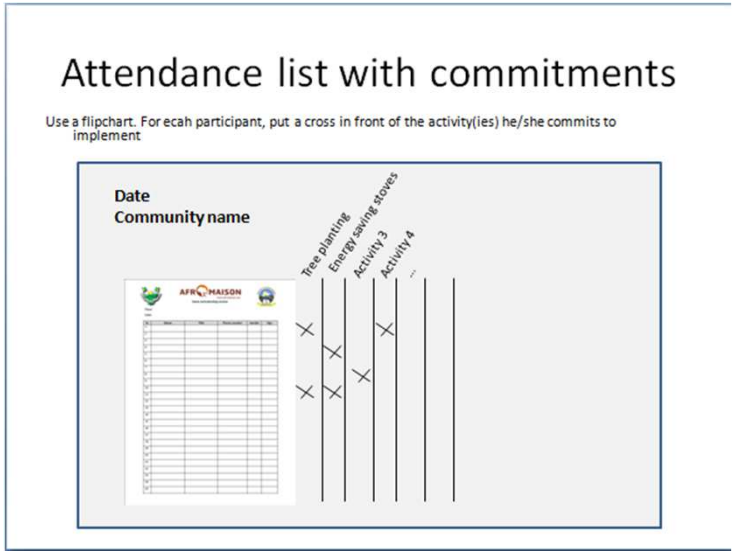
Discussion on Implementation

At the local level:



At the meso level:





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G-eau
Gestion de l'Eau, Acteurs, Usages

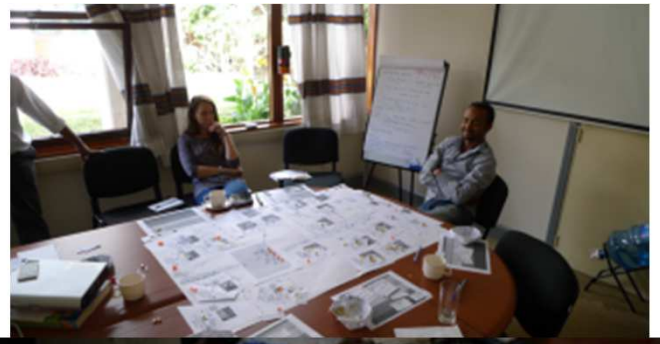
CoOPLAaGE

The Fogera Case Study (Ethiopia)

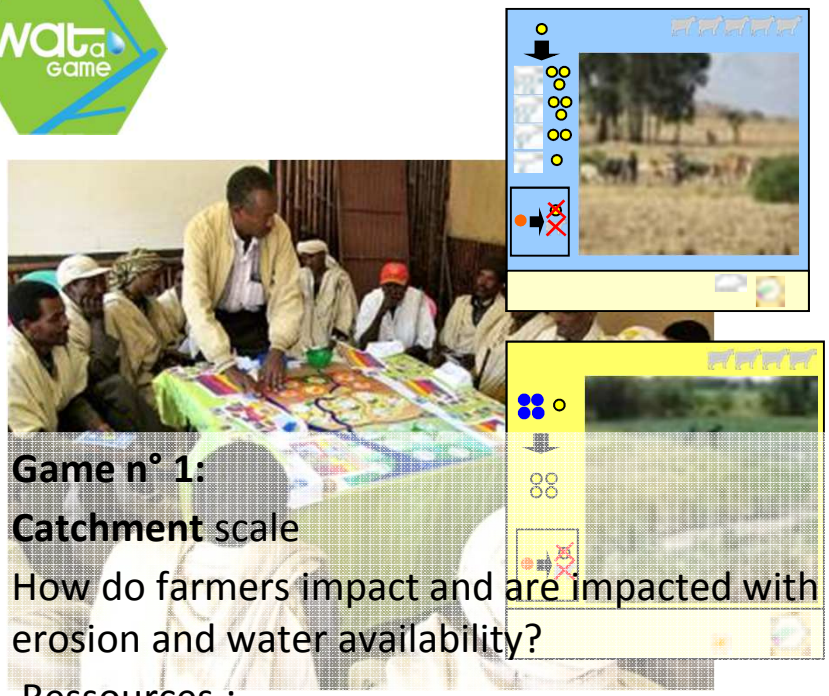
- Common CS for AFROMAISON and the CPWF Nile Basin Development Challenge project
- 3 game and planning workshops in Fogera as joint actions with an extended ILRI – IWMI – IRSTEA team
  - –Team of 7-8 people incl. 3 to 5 amharic speaking facilitators
  - –~ 50 participants mixing farmers and “decision-makers” (officers from different levels, NGO worker, researchers)

WAG-Fogera (Ethiopie, 2012-13) – Model development

Successive versions until the final one.. There was a dam at the beginning!



WAG-Fogera (Ethiopia, 2012-13) – Final games



Game n° 1:

Catchment scale

How do farmers impact and are impacted with erosion and water availability?

Ressources :

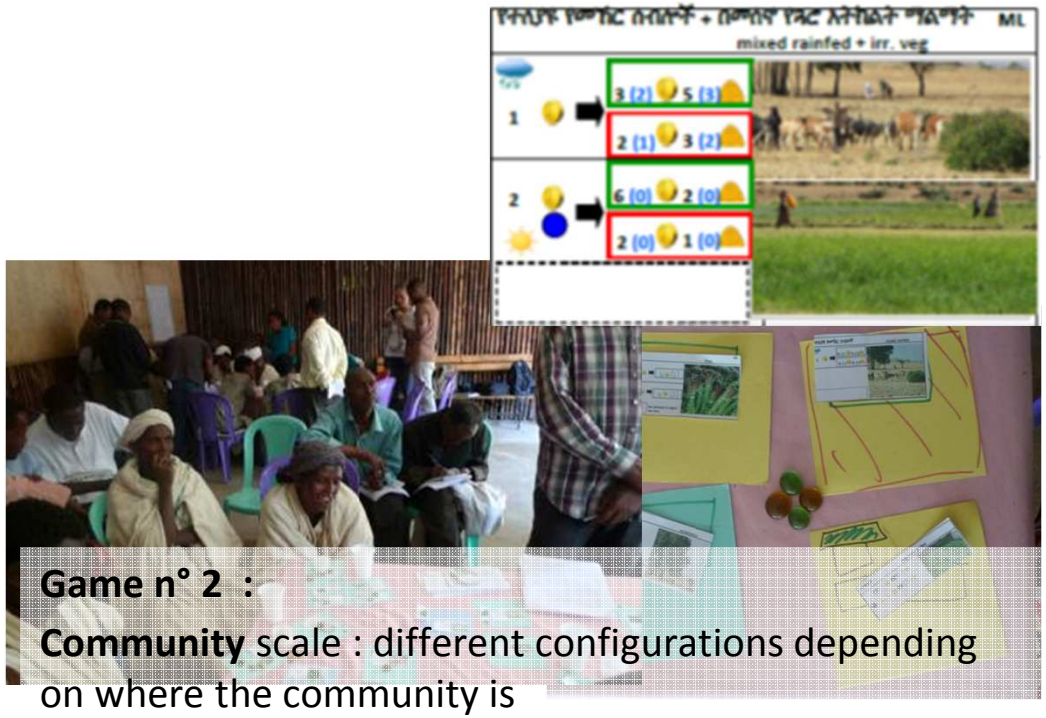
Money invested / produced

Soil needed / eroded in wet season

Cattle feeding on crops depending on their carrying capacity

Water in the river and in the aquifer in dry season

Work= limited nb of actions



Game n° 2 :

Community scale : different configurations depending on where the community is

How do cattle size and access to land constrain different types of households in their livestock management

Ressources :

Money invested / produced

Fodder produced

Cattle feeding on fodder

Work = nb of actions depending on HH size

Soil quality and **water availability** as contextual variables

http://watagame.info

WAG-Fogera (Ethiopia, 2012-13) – Use of the games

Games were used as an activity to facilite a multi-level planning process

Game n°1 (catchment scale)
Obj : understand interdependances between upstream and downstream
Use : strategy planning workshop – 1 group of farmers / 1 group of experts and managers

«micro-game » (community scale) + mirror activity (focus group + world café) for upper scales
Obj : expliciting strategy implementation constraints at the different levels
Use : implementation workshop -
Game: 3 territorial groups – farmers playing, experts and managers observing
World café : 4 level groups (incl farmers) with farmers observing in each group

http://watagame.info

Conclusion

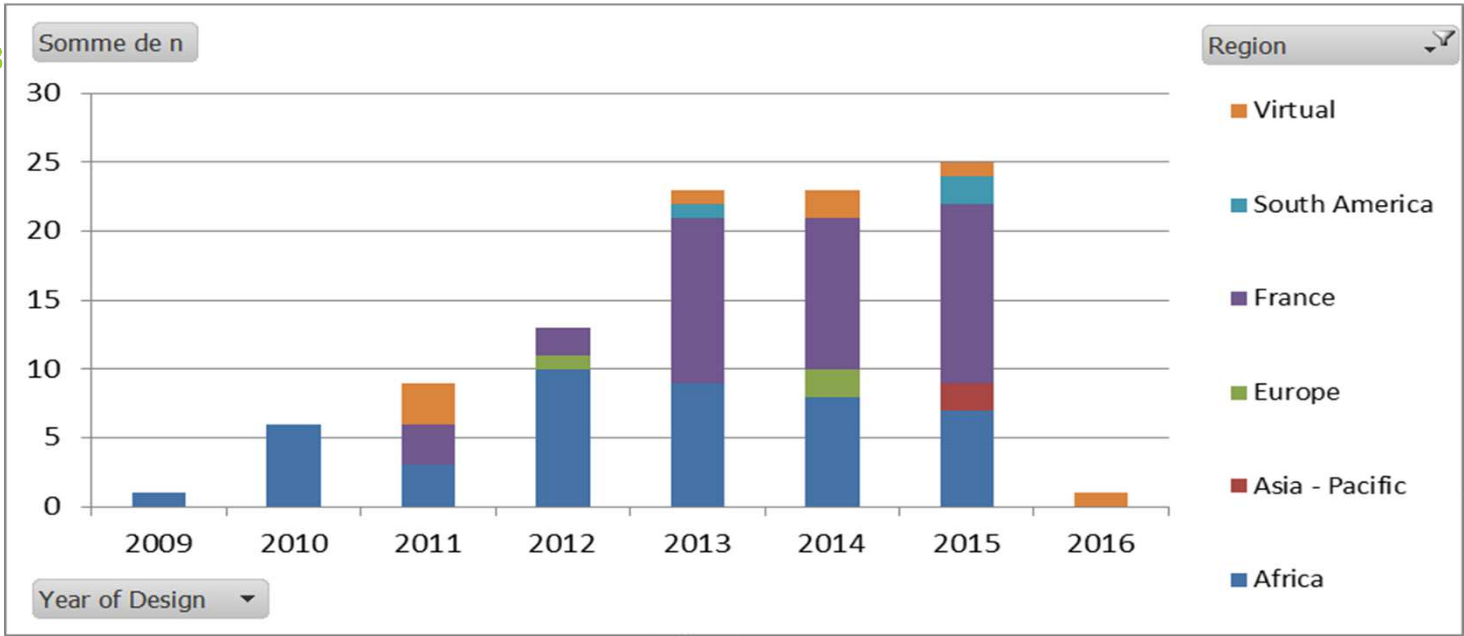
- New tools keep on appearing : SMAG (self diagnosis), ROCK (participatory observation kit), WAG 2.0 and extensions…
- Parallel developments with computer : experiments, distant learning, process workflows, database (loads of students cases)
- Ambition of growing a community (cooplanet)
- Some questions :
  - Status of our models – when and why reinjecting abm – there is nothing in the apparatus to capture the behavior of the actors
  - Transfering CS modeling … not so easy even with paper and pebbles (distinguishing rules at different levels – roles, activities, resource dynamics + calibration)

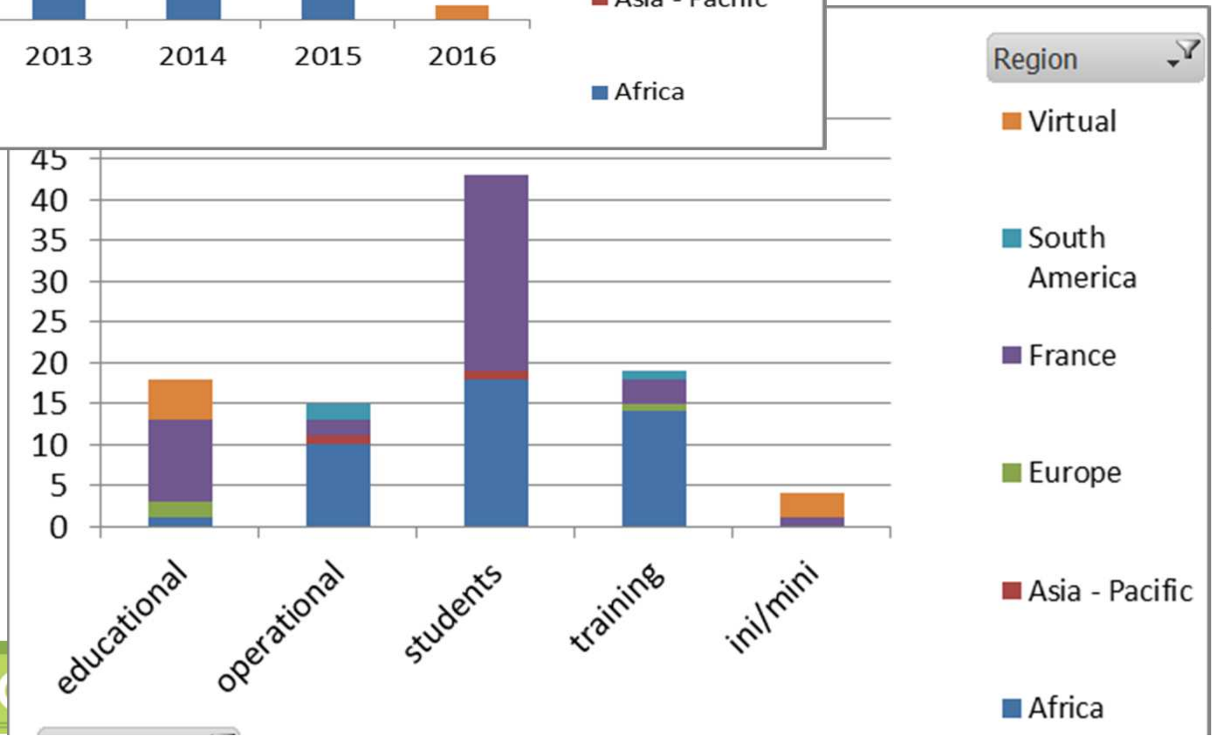
International experience

- Europe: Several European projects on Water Framework implementation, climate change adaptation, IWRM
- Africa : Moz (irrigation), SA (Catchmnt strat. Inkomati), Mali (IND, ODN), Niger (ABN) BF (training), Eth (mng land Degrad. Tana), Ug (Rwenzori INRM), Ke (East-Mt Kenya NRM), Sn (training, strat recess. Agri), Tn (Ichkeul, training), Ma (training)
- America : USA (training), Ca (training), CR & Nic (ES policy adaptation)
- Pacifics : Au (social justice, training), NC (IWRM), KI

→ 3000 users worldwide, 350 trainees in 2015

110 WAG case studies





Issues addressed

61/111 models informed

activities

Crop production	48
Urban / periurban	30
Tourism	23
Forestry	16
Livestock / herding	15
Fishing / hunting	15
Hydropower	9
Industry	9
Urban services and utilities	7
Mining	5
Wildlife & Park management	5
Sailing, shipping, navigation	1

ES dynamics

Water allocation / sharing	36
Water pollution	28
Irrigation management	27
Ecosystem preservation	20
Floods	17
Groundwater management	16
Sedimentation / erosion / siltation	13
Wetlands management	10
Landscape	7
Demography	6
Pests & epidemy	1

social dynamics

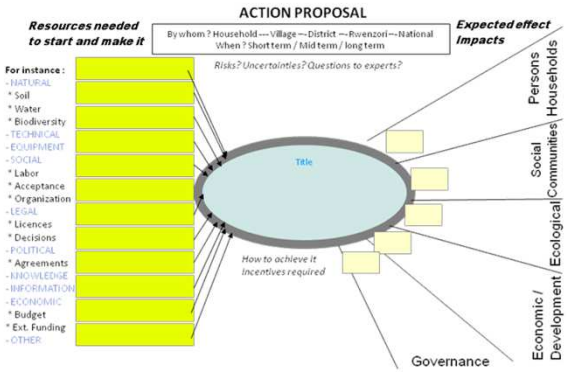
Policy implementation / reform	18
Poverty	13
Land access / grabbing	8
Equity & fairness	8
Economic instruments	8
Salinity	5
Migrations	3
War / civil conflicts	0

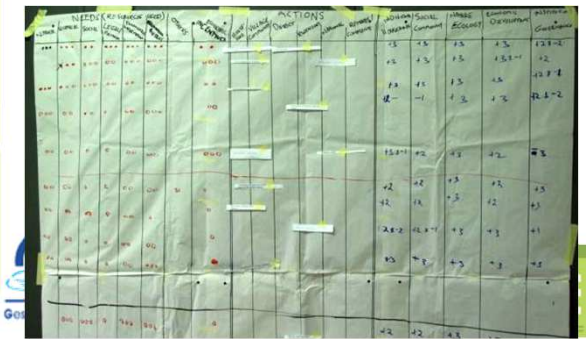
:

Other	10

- activities : infrastructures management & maintenance
- ES : sand invasion, ecosystem services
- social : water pricing , corruption, risk, public health

COOPLAN: confronting heterogenous actions and strategies at all levels





Example : outcoming strategy
And.. YES ! It's implemented.

Strategy Household Short Term (ordered)

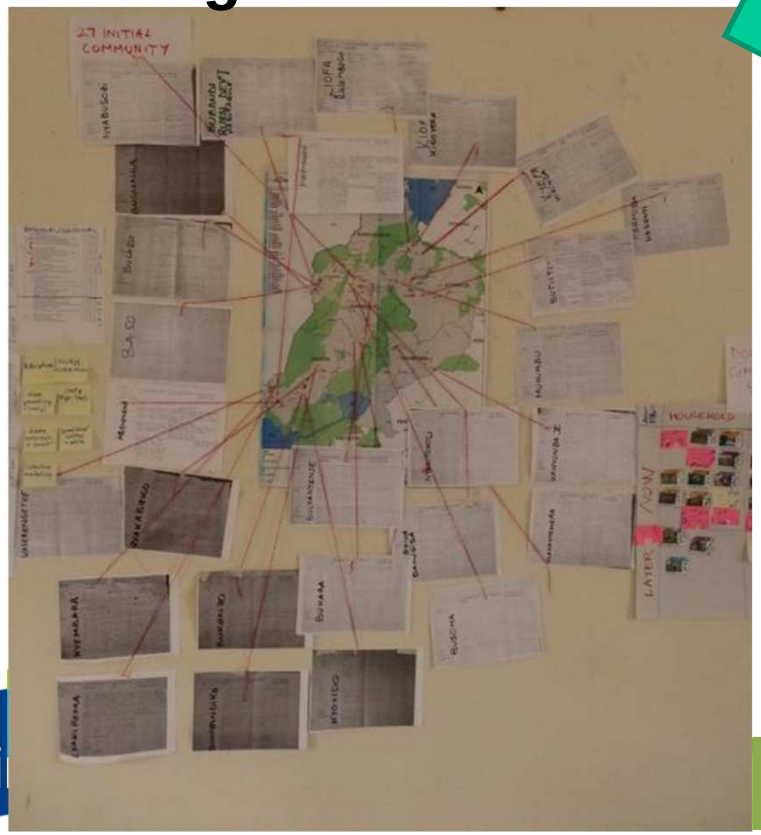
- Energy saving stoves
- Adopt energy saving technology at HH level (solar & biogas)
- Tree planting
- Tree nursary beds
- Education
- Conservation methods of farming + organic farming / Better methods of agriculture
- Control pollution of soil/water/air
- Mutual Information sharing and documentation
- Family planning

Uganda– 2013

27 communities strategies

+

3 meso-level strategies

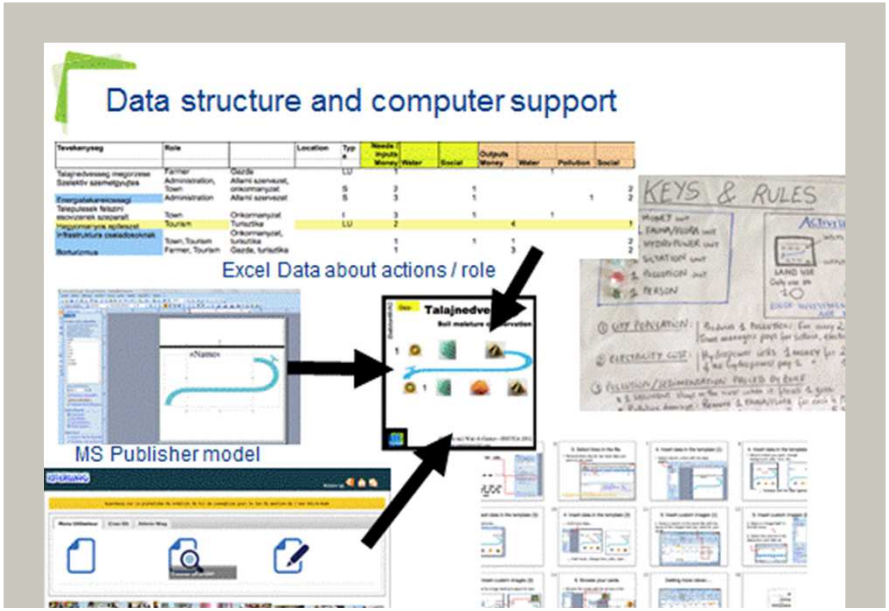


Proposed regional INRM strategy

COOPLAN ←→ Wat-A-Game
Sharing benefits between planning, modeling and simulation

- 2 alternative methods for joining benefits :
  - COOPLAN → WAG : strategic dialogue then test
  - WAG → COOPLAN : social simulation induces thinking and structuring of the « change strategies »

→ Combines social relevance, complexity management and feasibility



Just-A-Grid (JAG) : sharing principles for sharing resources

- A simple, adaptable method for eliciting and confronting distributive justice preferences, i.e. allocation principles
  - Based on previous use of role playing game (+ Syme, Nancarrow)

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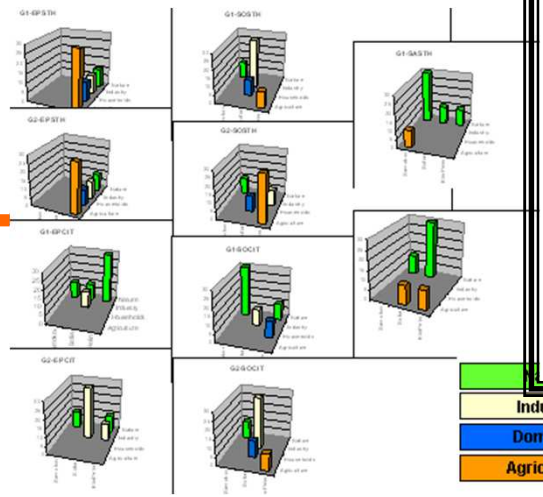
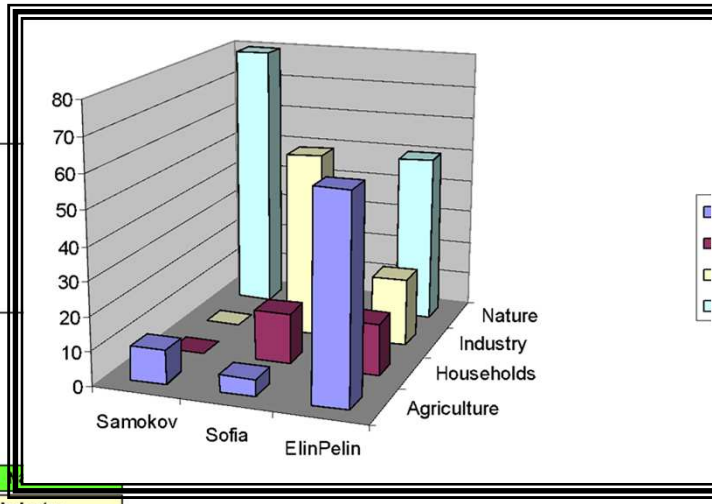
From diverse justice preferences to action





POSITIVE VISION
developed industry, developed agriculture, green and clean fields, people's mentality changed towards care about nature, river beds are kept clean by everyone; active citizens; each stakeholders does his work in a responsible manner; the municipality have a reserve for disaster cases; river beds are kept clean; (EL PEL OSH)

- There is no water stress
- Each community has its own water supply sourcesand adequate water supply equipment, which ensure the water supply to bigger extent;
- There is strategy for adaptation of agriculture and forestry to respond to the climate changes
- Working strategy to mitigate risks for droughts, approved by all interested stakeholders and secured financially

NEGATIVE VISION
no development of industry and agriculture, impoverishment, alcoholism, no one cares about anything. funds are managed at the central level; no money for development in the municipality; no development; poor municipality; big damages of floods. (EL PEL OSH)

- new period of droughts
- Everybody thinks that they know everything about water supply but do not do anything
- There are fights for water
- Government doesn't take responsibilities for fixing water problems
- The climate is Mediterranean, therefore there will be more expenses for water supply
- Sofia is only with one water supply

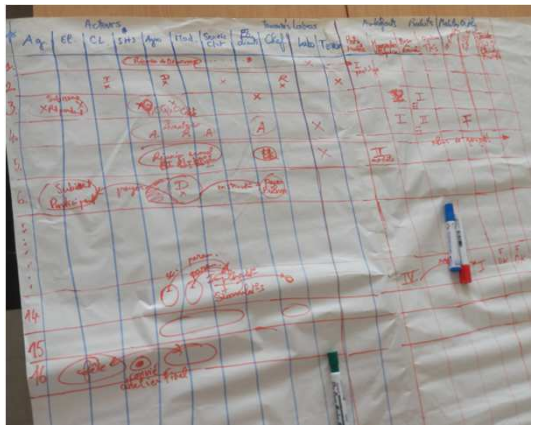
CoOPLAaGE

PrePar
Preparing design of the decision process

Pre-Participation
Let-them decide their participation

- *Participation / decision procedures are usually decided « from the top » and imposed (tentatively) to participants*

→ A deliberation on decision process, roles and rules



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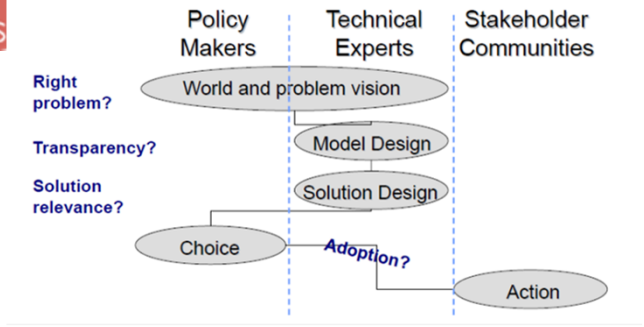
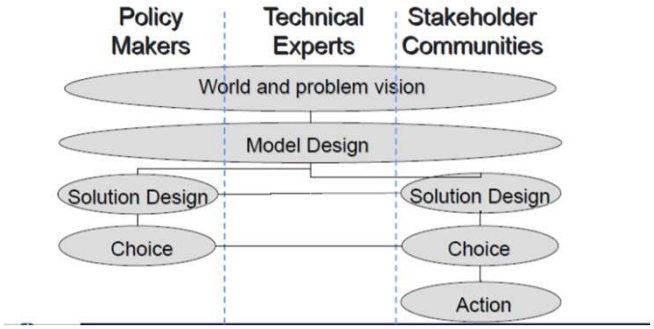
PrePar
Preparing design of the decision process

Deciding roles and methods for the participatory process



Or ?



1. (participatory) stakeholders analysis : who ?
2. Deciding procedural needs (steps, stages, …)
3. Discussing roles and engagement
4. Choosing (participatory) methods for each step : how ?
5. Discussing regulation, litigation, risks
6. Commitment

Discussing and evaluating social and political impacts

PhD and post-doc of Emeline Hassenforder

OUTCOMES ADAPTIVE NRM INSTITUTIONS & ORGANISATIONS
NORMATIVE / DECISIONAL
Rules, norms and decisions taken by the stakeholders (Indiv and collec / formal and informal / at the central, regional or local levels): sanctioning, conflict resolution mechanism , monitoring, etc.
COGNITIVE
* Knowledge about the SES and perception of the problem * Goal / Expectations * Commitments * Organizational identification * Innovative ideas / new decisions / agreements
OPERATIONAL
* Behavior / Practices / Actions * Capacity to act * Discourse vs. actual behavior and time between the 2
RELATIONAL
* Relations among stakeholders / org°, gps (trust/conflict) * Relational / social learning (about oneself and others) * Authority / Power * Frequency of the interactions * Multi scale
SOCIAL JUSTICE
Social justice / equity

- Using the ENCORE framework : External / Normative / Cognitive / Operational / Relationnal / Equity (Ferrand, Le Bars, 2004)
- Coupling different monitoring and evaluation methods

Source: E. Hassenforder 2015

http://watagame.info

Develop your own M&E: follow the phases

What are the objectives of the M&E in your PCS?

In regards to your M&E objectives, what do you need to know about the context, the process and the impacts?

Where do we stand? (context)
Where do we want to go? (impacts)
How can we get there? (process)

Will you be able to collect and analyse data on all the indicators that you listed?

Who do you want to share the M&E results with and how?

Which methods can be used to inform your list of indicators?

Who will implement and inform M&E methods, when and with what resources?

What does the data say about your M&E objective(s)?

2d order outscaling by training facilitators and full transfer

- A wide international multi-level training program (2015: 350)
- Training trainers by letting them « do » CoOPLAaGE on their own case study AND directly test it with a test group

(cf. ECOS S08-25 Let them transfer": The challenge of second-order team training in socio-ecological integrated management. Session 180 Aug 30, 15:15 Joffre)

http://watagame.info