

Experimenting with the design of policies on sustainable resource management.

Progress report
June 4, 2004

Background.

1. The Desert margins Program (DMP) ¹.

- Regional project of six years in three phases of two years, coordinated by ICRISAT.
- US\$16,335,000 from GEF, US\$33,537,000 in co-funding.
- Study sites: Burkina Faso, Botswana, Kenya, Mali, Namibia, Niger, Senegal, South Africa, Zimbabwe.
- Phase 1 of US\$15,219,133 (US\$4,987,134 from GEF and US\$10,231,999 in co-funding) approved for June 2002-June 2004 (extension until December 2004).

The overall objective of the DMP is to arrest land degradation in Africa's desert margins through demonstration and capacity building activities. The GEF increment to this project will enable the programme to address issues of global environmental importance, in addition to the issues of national economic and environmental importance, and in particular the loss of biological diversity, reduced sequestration of carbon, and increased soil erosion and sedimentation. Key sites harbouring globally significant ecosystems and threatened biodiversity have been selected in each of the nine countries to serve as field laboratories for demonstrations activities related to monitoring and assessment of biodiversity status, testing of most promising natural resource management options, developing sustainable alternative livelihoods and policy guidelines and replicating successful models. The project will make a significant contribution in reducing land degradation in the marginal areas and help conserve biodiversity. Guidelines, recommendations and supportive national policies that address biodiversity concerns are envisaged to be in place in the implementing countries.

The consortium of partners pools resources and expertise of nine NARS and NGOs, four sub-regional organizations (CORAF for western Africa, SADC/SACCAR for southern Africa, and ASARECA for eastern Africa), five IARCs (ICRAF, ICRISAT, IFDC, ILRI, and TSBF), and three ARIs (CEH, CIRAD and IRD, with the experience of UNEP and UNDP in the implementation of the CBD, UNFCCC and UNCCD).

Expected outputs.

The DMP aims at producing outputs related to 7 components :

1. Ecological Monitoring and Assessment;
2. Biodiversity conservation and sustainable;
3. Sub-regional, National and local capacity;
4. Alternative Livelihoods;
5. Policy and legal framework ;
6. Extension of Sustainable Natural Resources Management;
7. Stakeholders participation;

¹ Extracted from DMP project document.

Expected Role of ARIs and IARCs.

At the national level, IARCs and ARIs , will assist NARS through the Scientific and Technical Advisory Team (STAT) to develop a common framework for site stratification and to characterise specific bench mark sites. The STAT will also provide support to NARS for the development of standardised data collection methodologies, storage and management systems for an understanding of ecosystem status and dynamics with regards to the loss of biodiversity. IARCs and ARIs will also participate in the implementation of studies at the benchmark sites and assist with an overall syntheses at the sub-regional and regional level. In addition, IARCs and ARIs will promote capacity building in the NARS through training courses and collaborative studies at the field level. Through these collaborative studies, IARCs and ARIs will provide support to NARS for the development of natural resource management methods and technologies that include strategies for implementing and promoting conservation, restoration and sustainable use of degraded ecosystems.

At the sub-regional and regional level, IARCs and ARIs will assess the need for new scientific, technical and social science in order to implement and fulfill all the proposed DMP outputs, and then develop appropriate training packages that meet these needs. Such training may be provided by an array of different types of courses, or through scientific team exchange visits and information sharing between sub-regions and countries to facilitate technology transfer. Sub-regional and regional synthesis of results will be developed by IARCs and ARIs through upscaling methodologies for south-south trends and through the use of systems modeling, remote sensing and GIS tools for extrapolation strategies. Biophysical and socio-economic approaches to modeling will be integrated to allow the screening and identification of scenarios that will lead to best bet management practices and policies for rebuilding biodiversity and restoring degraded and collapsed ecosystems. Once appropriate technologies and land use practices have been identified, IARCs and ARIs will assist NARS scientists to assess the training needs of all levels of stakeholders and target populations across sub-regions and countries. They will then develop training packages and appropriate policy guidelines that meet these requirements. They will also generate and produce information / dissemination packages.

It is expected that ARIs and IARCs will provide strong complementary expertise in specific fields:

- ICRISAT in crop biodiversity and natural resource management
- ILRI in pasture lands restauration
- ICRAF in agroforestry systems
- TSBF for soil fertility management
- IFDC for integrated soil nutrient management
- ARIs in models development and upscaling
- Specialized NGOs in medicinal plants
- NARS in local expertise on above

AIARCs and ARIs are expected to contribute to outputs 1 to 5 of the DMP, by unfolding activities along the following lines²:

1. Development of common framework for site stratification and characterization of specific bench marks
2. Provide support to NARS for the development of standardized data collection methodologies, storage and management systems for an understanding of ecosystem status and dynamics with regards to the loss of biodiversity
3. Participate in the implementation of benchmark site characterizations and an overall synthesis

² S. Koala, personal communication (mars 2004).

4. Generating and production of information dissemination packages for all levels of stakeholders across sub-regions and countries (cross referenced to activities in national log frames)
5. Provide support to NARS for the development of natural resource management methods and technologies that include strategies for implementing and promoting conservation, restoration and sustainable use of degraded ecosystems (cross referenced to activities in national log frames)
6. With assistance of all participating researchers assess the scientific, technical and social skills required to implement and fulfil all outputs capacity.
7. Develop packages that meet requirements identified in 6.
8. Scientific team exchange visits and information sharing between sub-regions and countries to facilitate technology transfer
9. Develop an upscaling methodology to infer south-south trends at a regional level through the use of system modelling, remote sensing and GIS tools for extrapolation strategies
10. Integrate biophysical and socioeconomic approaches to modelling that allow the screening of scenarios that will lead to best bet management practices and policies
11. With assistance of all participating researchers assess the training needs all stakeholders and target populations implementation
12. Develop training packages and appropriate policy guidelines that meet requirements identified in 11.

The contributing ARIs are the French Agricultural Center for International Development (CIRAD), the Centre for Ecology and Hydrology (CEH - Edinburgh), and the Development Research Institute (IRD - UR083).

- CEH focuses on physical and chemical processes linked to carbon cycle ;
- IRD focalises on soils biology ;
- CIRAD focuses on environmental policy through an experimental approach involving upscaling, modelling, and training.

Development of CIRAD-DMP proposal

Since January 2003 CIRAD and the DMP coordination have been exchanging intensely about how CIRAD can best contribute to the work of the DMP. During the brainstorming sessions that took place within CIRAD, several scientists showed a marked interest and were ready to invest heavily in the DMP. This led to a joint proposal coordinated by Dr Grégoire Leclerc, which involved scientists working in socio-economics research³. The draft was submitted in May 2003 to the DMP coordination, which responded positively.

In August 2003 a new version of the proposal was sent which was officially endorsed by CIRAD top management, and the next months were dedicated to polish the proposal to include suggestions from the DMP coordination in order to improve its linkages to the DMP logframe. In January 2004 we had the green light from the DMP coordination to submit a workplan and budget for period January to June 2004, which we prepared and sent for approval by CIRAD administrative bodies within two weeks. We also started the activities related to the DMP but funded by CIRAD counterpart. The approval process took several months, culminating in a full proposal signed by CIRAD and sent to ICRISAT DG on April 30.

³ Which we found was somewhat underrepresented in the current national DMP activities, suitable for transversal research, and necessary to improve impact.

CIRAD-DMP proposal summary

CIRAD proposal relates to socio-economics and NRM policy. We propose to set-up, starting in DMP phase 1, a learning process that is co-constructed between scientists, policy analysts, and decision-makers, where the principles learnt from the field are synthesized and shared in a way that maximizes impact. This is done not only through support to NARS but also through sub-regional case studies, in order to go towards more coherence in the approach of policy intervention for the 9 DMP countries.

In our proposal, public policy is approached as a social mediation process, where actors and sectors confront their representations, objectives, and constraints. We offer to set-up and test a platform for demonstration and capacity building with policy makers and representatives of local organizations, to help endogenize resource quality and availability in development policy design. The project contributes to build multi-institutional capacity for policy design related to Natural Resources Management (NRM). It integrates lessons learnt from local experiences, modelling and upscaling. It envisions a 5 years horizon but the strategy and work plan will be re-evaluated after 3 years.

With groups of scientists and policy makers we will test the process of policy design and negotiation, and the relevance of prevailing economic and ecologic approaches to resource diversity, quality and management. This is done by capitalizing and formalizing local experiences in NRM (e.g. DMP guidelines, appropriate technology, sustainable livelihoods) and translate in a policy making context of national and sub-regional scope. The experimental platform will support the co-construction of an approach that is both culturally relevant and scientifically sound. It is meant to be institutionally independent and neutral to allow the freedom of exploring of policy options and avoid the trap of politics. In that sense, it is a learning tool and not a problem-solving one.

In the first 3 years the project focuses on the the arid and semi arid agroecological zones of the DMP West Africa subregion (Senegal, Mali, Burkina Faso and Niger). We will go with national DMP research and extract policy recommendations that will feed in the platform. We will examine the way these countries implement the Convention for Biological Diversity and the Convention to Combat Desertification, particularly with respect to their relevance to climate change and the cross-cutting issue of land degradation. We will also realize transversal research on natural resources diversity, quality and management in a sub-regional/national policy context.

The project is done in close collaboration with the national DMP coordination bodies of the sub-region, and with the Pôle Pastoral Zones Sêches (PPZS), Agrhymet, IIED, IER (Mali), with ISRA, ENEA and UCAD (Senegal), as well as with the IARCs and ARIs involved in the project, as well as CORAF.

Four outputs are expected to be produced by the project:

- 1) An assessment of the current policy framework and its instrumentation, and on the current implementation of environmental measures.**
- 2) An assessment of resilience of rural sub-Saharan agro-ecosystems, with an emphasis on pastoralism and mobility and on the role of biodiversity and land degradation.**
 - We will realize transversal studies to enable upscaling of local experiences in a policy context.

3) A series of well-documented case studies that provide

- Co-generated biodiversity, land and water use rules to help policy design.
- Resource use models (land degradation, resource quality, biodiversity) organized in a generic framework. This will be done in close collaboration with IRD and CEH.
- Policy recommendations (goals, instruments, and implementation).

4) A platform for information exchange, negotiation, and experimental development economics (EDE)

- EDE package, including documents, data, and models
- EDE network, workshops and action-research

CIRAD project, although built with a strong internal coherence (and therefore has its own set of outputs and activities), is tightly linked to the DMP outputs and to the role expected from ARIs. More details can be found in the approved project document and CIRAD-ICRISAT MOU.

While the framework for CIRAD intervention is defined for the duration of the DMP project, a detailed work plan and budget has to be approved for each DMP phase. For the January-June 2004 period of Phase 1 the following milestones⁴ have been set:

- Support to partners for experimental design and data analysis (Mali)
- Indicators of human pressure on the Bamba environment, in a territorial context. (Mali)
- Assessment of DMP biodiversity inventories in Bamba (Mali)
- MAS for common pool resources management, adapted for biodiversity and climate change. (Sénégal)
- Elicit local knowledge on NRM, biodiversity and climate change adaptation for MAS model (Sénégal).
- Synthesis of Sahelian NRM networks.
- Internet portal and mailing list of network members
- Integration of French ARIs to the network
- Focus group on data collection with Malian partners and NGOs of the Gao-Tombouctou sub-region, which will include a hands-on training session in statistics.
- Assessment of NRM policies in NEPAD
- Pre-assessment of CDB legal and institutional framework in Senegal
- An Interactive tool for national Food security assessment (West-Africa scope; case study in Burkina)
- Land use models at different scales (village, region, country for Burkina Faso) that take into account carbon abatement costs.
- Training needs assessment and planning workshop on environmental policy formulation.

The total budget is \$154,091 to which the DMP contributes \$61,500 and CIRAD \$92,591. We mobilize the expertise of several CIRAD scientists, in particular: Bruno Barbier (France, Burkina Faso), Geert Van Vliet (France); Denis Gautier and Philippe Birnbaum (Mali); Grégoire Leclerc, Marcel Djama, and Ibra Toure (Senegal).

While in phase 1 CIRAD emphasizes on support to NARS for standardized data collection, modelling tools, and training, we have also worked on other fronts (see table below).

⁴ Some milestones have been merged for clarity in the PWB synthesis document.

Approved budget (unfolded on ARI activities)

PWB DMP GEF Phase 1 In USD		Budget Year 1		Budget Year 2		Total	
CIRAD		GEF	Co-funding	GEF	Co-funding	GEF	Co-funding
Activities	1.Characterisation of benchmarks	-	-	-	-	-	-
	2.Standardized data collection	-	-	6 138	15 958	6 138	15 958
	3.Overall synthesis	-	-	3 375	12 640	3 375	12 640
	4. information packages	-	-	-	-	-	-
	5. Conservation and restoration, and livelihood options	-	-	5 677	6 504	5 677	6 504
	6. Identify scientific, technical, and social skills	-	-	3 614	3 981	3 614	3 981
	7. Develop packages	-	-	-	-	-	-
	8. Scientific team exchanges	-	-	4 936	7 164	4 936	7 164
	9. Scaling methodology	-	-	2 214	3 611	2 214	3 611
	10. Modelling	-	-	13 313	14 868	13 313	14 868
	11. Assess training needs	-	-	12 984	14 599	12 984	14 599
	12. Training packages	-	-	9 250	13 267	9 250	13 267
	total	-	-	61 500	92 591	61 500	92 591

Progress report: January-May 2004.

We report our progress on the milestones for phase 1 by grouping them under corresponding DMP outputs.

DMP Output 1: Improved understanding of ecosystem status and dynamics with regards to the loss of biodiversity

Partners: (Mali) Institut d'Economie Rurale (IER), CEH, ICRAF

Milestone: Support to partners for experimental design and data analysis (Mali)

CIRAD has assisted DMP Malian partner IER to improve the experimental design of biodiversity conservation and restoration in Bamba site (Northern Mali). At the moment the experiment is designed by IER as follows: 2 ha natural vegetation (fenced with barbwire); 2 ha experiments of tree rows alternating with grass rows (fenced with barbwire); 2 ha of natural vegetation (non-fenced). The first purpose of this experimental design, in Malian researchers mind, is to demonstrate to local people how important is human pressure and how biomass can regenerate either by itself or via tree plantations. However, there is no replicate to this experiment at this time, while three replicates at least are needed each landscape unit, in order to be "scientifically" relevant. IER is reluctant to change this experimental design because of the additional costs. As this type of experiments typically carried on by NARS has important consequences for the DMP, it would be a task for the STAT to suggest a strategy for moving from an experiment which is built with a demonstration purpose to one that can be extrapolated and published in a peer-review process.

Milestone: Indicators of human pressure on the Bamba environment, in a territorial context. (Mali)

Anthropic pressure may be studied with two complementary methods: in the first case the entry point is the set of indicators of human pressures on natural resources such as presence/absence of indicator species, tree shape according to cutting or herding practises, etc.; in the second case the entry point is people's representations of the environment, of its dynamics in time and in space and of the contribution of human activities to this dynamics. We first focus on this second approach in order to link (during phase 2) with DMP studies on vegetation, ecology, and human processes.

We have initiated a pilot study in which a IER researcher based in Mopti was involved. Respondents have described their environment and the changes that have occurred, the perceived causes of these changes and their consequences, and the responsibility of populations in mitigating or promoting these changes. Then, we have tried to better understand each of users groups livelihoods and the way they have developed in space and time, by running participatory planning exercises for the Bamba territory. Lastly we have asked local people to imagine the consequences of their own livelihood on the environment (as well as the ones of other groups), and to formulate their ideas about preventing environmental degradation. This study, which is still on-going as far as participatory mapping is concerned, is the first step in the determination of human pressure indicators according to local people's representations. The second step will be to link these representations to land and biodiversity indicators obtained from field surveys, and to land-use and sector models.

Milestone: Assessment of DMP biodiversity inventories in Bamba (Mali)

The vegetation of the area of Bamba corresponds to the transition from the Sahel to the Sahara. It is characterized by a woody layer mainly dominated by *Acacia tortilis* subsp. *raddiana* and an herbaceous layer where the graminaceous *Panicum turgidum* prevails. The shrub layer is generally missing. Within this floristic structure, the specific diversity of the vegetation is mainly dictated by local variations of the edaphic conditions. The herbaceous strata dominates over the sandy grounds whereas more diverse woody vegetation appears in the clay-sandy sectors and more generally in areas where ground water is close to the surface. In addition, the topographic variations and in particular the position of the vegetation with respect to the wind are determining the distribution of the biomass *sensu lato* (i.e. density, height and development of the vegetation). This graduation is the consequence of a rather lateral drainage in the tops of slopes and the rather hydromorphic grounds in the basins shaped between the dunes.

Thus the variability of the vegetation of Bamba, its structure and its composition, is mainly dictated by the accessibility of the plants to the water resources and therefore, the variable capacity of the grounds to preserve a sufficient hydrometric level. In addition, the dominant ligneous species, *A. tortilis* could play an additional role in this hydrous availability since it is equipped with a physiological system equivalent to a hydraulic pump able to go up in-depth water to redistribute it partly, under surface during the night. This physiological property, named 'Hydraulic Lift', has been studied in depth and it has been shown that the quantity of water available for the herbaceous carpet is statistically higher near an *A. tortilis*. Thus the woody structure seems to be fundamental in maintaining simultaneously a high level of specific diversity and an optimal development of the overall biomass. Anthropic pressure interferes greatly with this natural system: in the zones intensely grazed and trampled, graminaceous and cyperaceous vegetation is replaced by annual grasses and weeds; in addition, the woody layer is pruned and grazed intensely, which results in trees that adopt a stunted architecture and never exceed 1 m in height.

Our colleagues from IER are now preparing a map showing of the different vegetation functional units, and a map of landscape units; we are assisting this team in improving the science underlying this map. To that aim we analyse the data from a design which currently consists in 17 ground observation sites. Each site represents a 1km transect on which the floristic composition as well as the production of herbaceous biomass are monitored according to the biotic and the abiotic pressures. We found that the density of survey points has to be increased in order to have a reliable assessment of the biomass and of the biodiversity of the area; the map of landscape units would also benefit from such an improved sampling scheme.

After this initial phase of scientific exchanges between IER and CIRAD, we aim to accompany our DMP colleagues in term of methodological development and statistical analysis, in the perspective of producing extrapolable results and joint publications.

DMP Output 2: Participatory natural resource management methods that include strategies for conservation, restoration and sustainable use of degraded ecosystems developed and implemented.

Partners: (Senegal) Institut Sénégalais de Recherches Agricoles (ISRA), University Cheikh Anta Diop (UCAD), Pôle Pastoral Zones Sèches (PPZS).

Milestone: MAS for common pool resources management, adapted for biodiversity and climate change. (Sénégal)

Agent based models are powerful when it comes to integrate local knowledge with expert knowledge on NRM, and explore complex dynamic scenarios with local players. We believe that the results of DMP research, as well as the simulation of innovation diffusion, can be effectively shared through a companion modelling involving multiple agents evolving in a spatial environment. CIRAD has ample experience with its user-friendly platform CORMAS.

We opted to use a spatialized multi-agent system, which was developed for common pool resources management around a drilling site (see figures below), as a generic framework that can be adapted to other DMP sites. Although the pastoral activities are more present in the Thiel site, it is in many ways similar to other Senegal DMP⁵ sites and little change is needed to use the ABM for the latter. It includes an activity diagram for Pastors, Agropastors, and Agricultors; ponds and vegetation dynamics models for 5 landscapes; an interface to specify climate scenarios. However as it is now, the model does not yet include a biodiversity component.

We did a short field trip precisely to explore how a biodiversity module could be implemented in the agent-based model. We identified key elements to take into account:

Zones for managing/monitoring biodiversity:

- Hot spots for conservation/restoration of biodiversity (e.g. ponds which are a reservoir of biodiversity, Doly ranch)
- Landscape units
- Probes to compute diversity indices (e.g. Shannon-Weaver)

Plant collections, with individual plant attributes:

- Ligneous/forage
- Number of individuals (young, mature, dead)
- Use and preference scale for each actor type
- Rarity (scientific)
- Simple growth model (Annual or perennial, etc..)
- Dictionary to convert scientific and indigenous names

Each actor type (pastors, farmers, cattle) has activities related to these plants: extractive (destructive or not), management (pruning), according to their preferences scale.

Two new types of actors: “foreigner” (does not follow community rules), and fuelwood producer.

⁵ In fact Thiel is less than 50 km east of the Sadio rural community which is a DMP site.

New rules for actors:

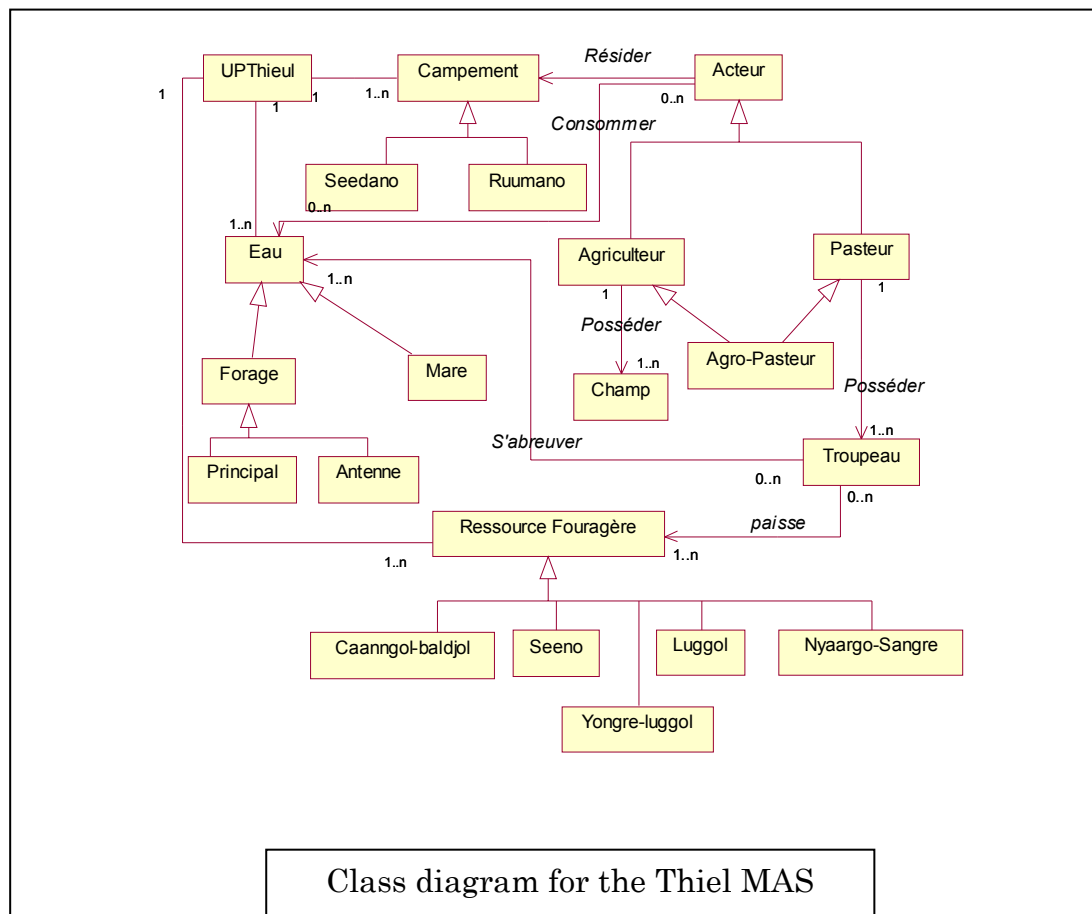
- Cattle disseminate seeds
- Some actors contribute to a conservation project, which affects their preferences towards certain plants; there is diffusion of innovation (affecting preferences) among actors of the same group.

Other rules may emerge as a result of planned work on local knowledge on biodiversity. The next step is to hire a student or a consultant to implement these rules in the ABM. Adaptation of the ABM to other DMP sites Training in agent-based modelling with CORMAS (<http://cormas.cirad.fr/indexeng.htm>) will be offered for phase 2.

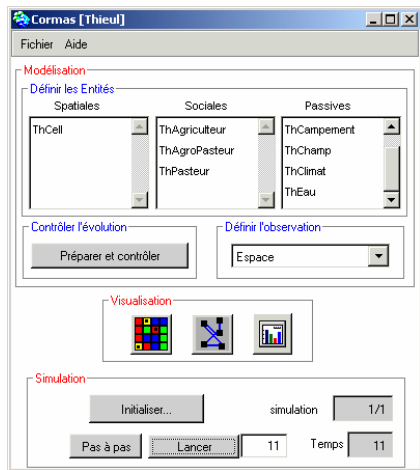
Milestone: Elicit local knowledge on NRM, biodiversity and climate change adaptation for MAS model (Sénégal).

We have written the TOR to hire a student to work on this output. However field work will have to be done during the rainy season when annual species become identifiable and when herders come back to their permanent camps and are relatively available. We will follow closely the methodology proposed by Ambrose-Oji et al (2002) in order to have local assessments that are useful for monitoring and evaluation of biodiversity.

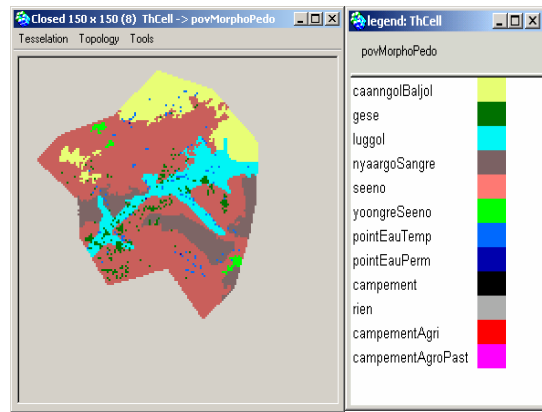
Other DMP teams are planning to perform local biodiversity assessment for other sites. The STAT workshop will be an excellent opportunity to share experiences and come up with a robust methodology that could be applied to all DMP sites during the next phase. The ABM will be adapted to take into account this agreed methodology.



Class diagram for the Thiel MAS



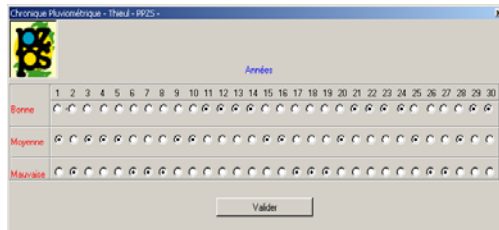
Control panel



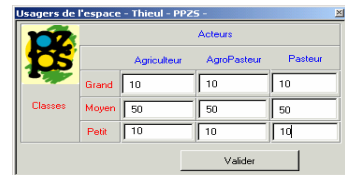
Land use



Ponds dynamics

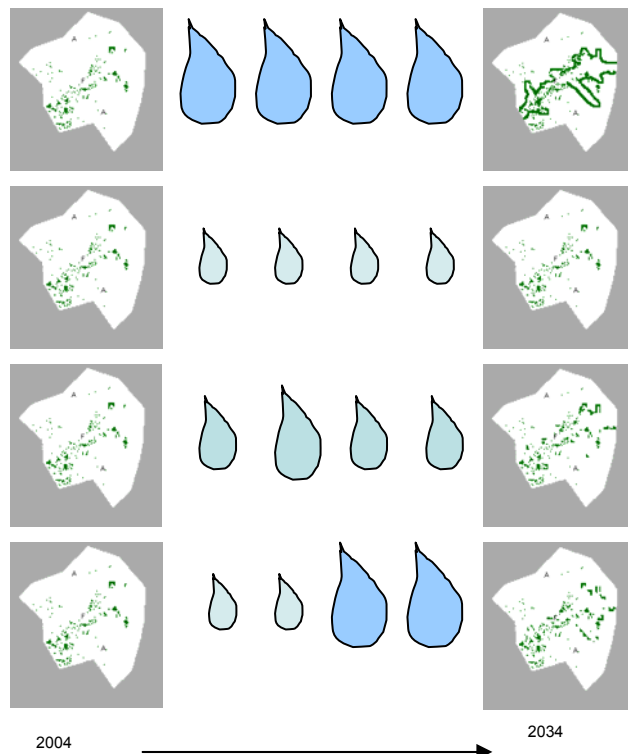


climate



agents

User interface for the Thiel MAS



Effect of climate on agriculture extension 2004-2034 : from top to bottom : good/low/normal rainfall ; bottom: low rainfall (2004-2019) followed by good rainfall

DMP Output 3: Capacity of stakeholders and target population enhanced through involvement/participation at all stages of the project cycle.

Partners: (Senegal) Institut University Cheikh Anta Diop (UCAD), Pôle Pastoral Zones Sêches (PPZS). (Mali) IER.

Milestone: Synthesis of Sahelian NRM networks.

Networking is now a priority and a necessity in research and development projects. The idea of a “network”, however, spans a wide range of concepts and realities.

For some, networking means connecting professionals through diverse partnerships and coordinations. This is typical of NRM and development networks, including communities of practice. Although very good for learning within a given discipline, in some cases it can give unexpected results: for example if society at large is invited to join or use the network, is that everything is viewed through the lens of the “expert” and a possible drift towards the “total institution”.

An extreme conception of a network is to consider it as the sole property of the user. The network is therefore the set of non-professional relays mobilized by a user to go where he wants to go. This is typical to open systems, and there will be as many networks as there are personal situations.

A third version of the network, related to the “sociology of translation” is emerging as a powerful catalyst for action and innovation. Innovation sociologists Michel Callon and Bruno Latour have formalized a framework to analyse such networks. It has been applied to understand the emergence of technical innovations and scientific findings, the construction of norms and agreements between players with diverse interests (for example new fishing habits to avoid wiping some fish species). We are implementing a network of that kind for our action research on public policy formulation, in which contribution of the DMP science will be key (see next output).

NRM networks will be analysed according to their type, objective, history, stakeholders, structure, and activity. We will also try to assess their evolution, the stimulation of learning processes, and their impact.

Milestone: Internet portal and mailing list of network members

We have started to organize the framework of the communication and experimentation platform needed for a multi-stakeholders learning dialogue. Although participatory approaches have been relatively successful in reducing the communication gap between scientists and local players at community level for specific problems, much remains to be done to bring together decision/policy makers, the research community and society at large. This is essentially due to the multiple scales, perspectives, and different timescales involved.

The platform aims at translating concepts and ideas between players from different backgrounds, i.e. a social-technical hybrid network. It is inspired from the principles of the “sociology of translation” (as defined by Callon and Latour):

- It has to connect players with diverging interests, which need construction and investments to attract different parties.
- It has to translate ideas between players. Callon and Latour commend that the translation is to be done by a network member that has the legitimacy to play that role.

- When the network expands and sub-groups emerge, the negotiation will concern spokespersons of these sub-groups.
- For shared knowledge an intermediary, a medium is needed, to assemble and transmit diverse data and information in multiple forms, in an accurate and coherent way.
- Non-human factors (modelling, technologies, etc..) are also key players in the platform.

The platform will eventually consist in three components.

- 1) An interactive internet portal;
- 2) A monthly newsletter;
- 3) Periodic socio-technical hybrid forums or training sessions.

We have set-up the internet portal (www.sahel.info) as a content management system (which needs virtually no input from a webmaster), where registered editors can post opinions, news, and information, and where readers vote, exchange, and comment. The number of times a comment is viewed, is voted for, the number of replies, as well as access statistics are monitored. It allows to use the portal as a barometer, i.e. to identify critical issues and information gaps. It also allows to rank editors and assist in the selection of legitimate “translators”. “Best of” and critical issues will be addressed within hybrid forums and the newsletter. The system, which has been tested within a restricted environment, will now be publicized to all partners. In the near future we need to add a search engine, an archiving facility, and the possibility to post documents.

Since March 2004 we have been posting selected news related to Policy, Environment, Economics, Research, and Rural Areas (112 posts in total). The site has only been registered to the search engine Google (and not publicized at all otherwise) yet it has been visited by 300 different people who have viewed nearly 5000 pages, while most postings have received several votes (however nobody has used the forum yet). We found that Environment and Research issues are very poorly represented in the media, a situation that should be addressed if we want the DMP to achieve some outreach and impact on society. Postings on sustainable growth or local governments have been viewed much more often than those on renewable energy or water management, for example. These are very preliminary results and we expect to improve our understanding of the dynamics of NRM information as the portal gains in relevance, legitimacy, and visibility.

The next step is to find the way of attracting various editors and readers, including DMP partners, to contribute to the dynamics of the platform (e.g. editors, mailing list, etc..). To improve the efficiency of communication we will investigate the possibility of teaming-up with CESTI, Dakar journalism school, so that professors and students could use the platform for experimenting with communication and vulgarisation of NRM research, which would benefit both to the DMP and to science in general.

Milestone: Integration of French ARIs to the network

No progress has been made on this output.

Milestone: Focus group on data collection with Malian partners and NGOs of the Gao-Tombouctou sub-region, which will include a hands-on training session in statistics.

The focus group and training session is planned for the first week of July when all partners will be available.

DMP Output 5: Appropriate policy guidelines and interventions for sustainable resource use formulated, promoted and adopted.

Partners: (Senegal) Institut des Sciences de l'Environnement (ISE - Université Cheikh Anta Diop UCAD). (Burkina Faso) Institut de l'Environnement et de Recherches Agricoles (INERA), Ministry of Agriculture (Secrétariat Permanent de Coordination des Politiques du Secteur Agricole), University of Ouagadougou.

Milestone: Assessment of NRM policies in NEPAD

We have virtually completed a summary of the environmental policy framework of NEPAD, which allows us to better understand how environmental measures could be piggybacked on this new economic policy aiming at the integration of African economies by 2025. The full report will be available by June 30.

Milestone: Pre-assessment of CBD legal and institutional framework in Senegal

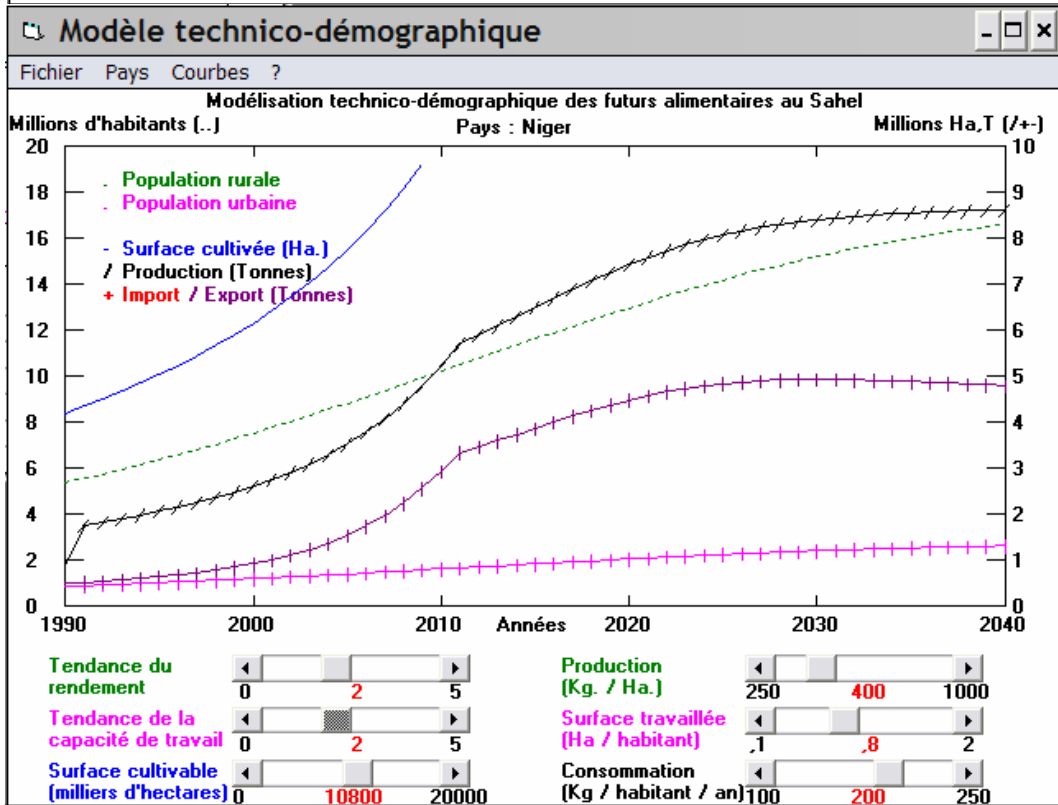
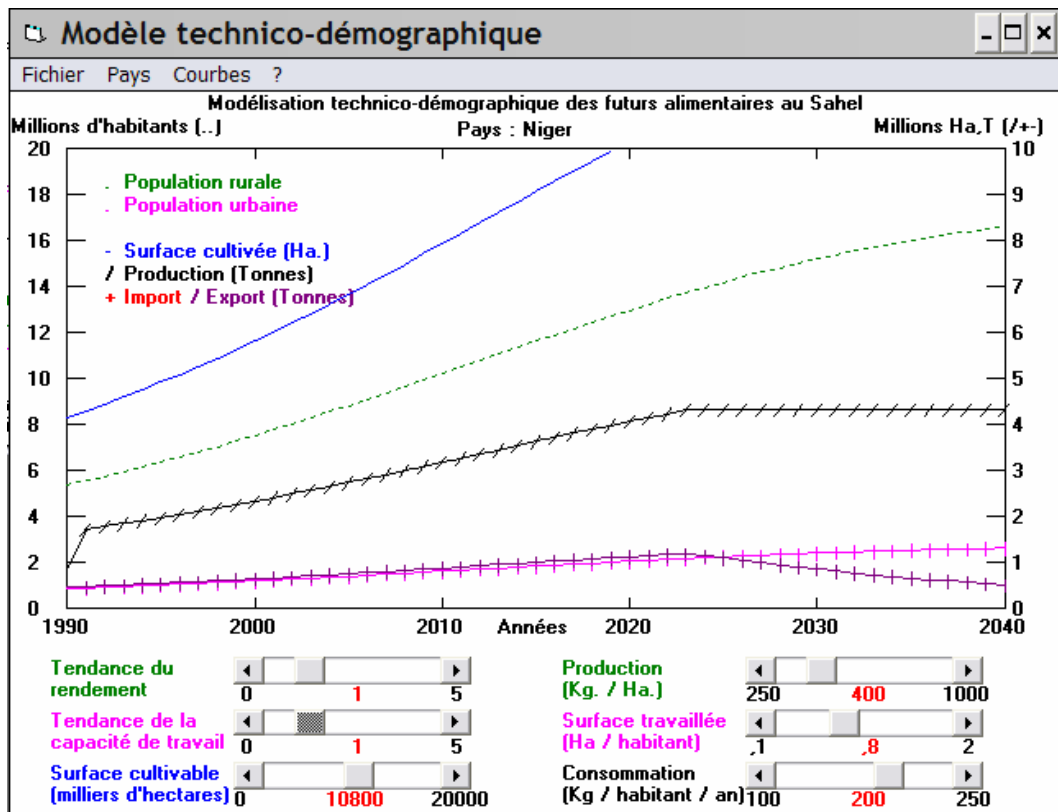
We are in the process of completing an assessment of the implementation of the Convention for Biological Diversity (CBD) in Senegal. Field work in DMP sites is planned for June and early July 2004. It will allow us to investigate how the CBD was actually put in place in these areas.

In addition to developing a new national strategy for sustainable development, the Institut des Sciences de l'Environnement (ISE) is on the verge of revisiting Senegal's strategy for implementing the CBD, which was developed by ISE and approved in 1994. It is a unique opportunity for DMP research to be taken into account in Senegal environment policy. We are currently exploring ways to use our hybrid forum to facilitate this dialogue and the co-construction of these strategies.

Milestone: An Interactive tool for national Food security assessment (West-Africa scope; case study in Burkina)

The interactive tool for Food Security analysis, programmed in Visual Basic, has been used to prepare a paper on food security in Senegal and Burkina Faso for the Francophonie Conference on Sustainable Development in Ouagadougou June 1-4 2004. The tool combines a demographic transition component with a "technical transition" one which corresponds to diffusion of innovation. The effect of DMP-related innovation can be simulated by modifying land and labour productivity parameters (see figure below).

We are hiring a java programmer to update the interface to takes into account user defined initial parameters, and plan to release it on the www.



Scenarios for Niger: top: no change in land and labour productivity; bottom: increase of land and labour productivity by a factor 2 over 50 years

Milestone: Land use models at different scales (village, region, country for Burkina Faso) that take into account carbon abatement costs.

In the framework of the collaboration with SP/CPSA, Hamidou Seone, ex-employee of the ministry of agriculture of Burkina Faso, was sent to Montpellier to prepare a master degree in agricultural economics. His master thesis is about bioeconomic modelling of carbon sequestration in Burkina Faso to draw curbs of abatement costs. Our hypothesis is that some new cropping systems can produce a win-win situation reducing carbon emission and increasing productivity. The model is calibrated for the western region of Burkina Faso and Mr Seone is currently running simulations. He will defend his thesis in September. These results will be shared with DMP ARIs and IARCs.

A two weeks workshop was conducted in May in Kaya SP/CPSA to calibrate a microsimulation model (type of agricultural sector model taking into account farmers' heterogeneity) for the whole Burkina Faso (Mourad Ayouz from CIRAD). (it was paid by the SCAC).

Bruno Barbier will visit Burkina during early June for coordination of follow up with partners.

Milestone: Training needs assessment and planning workshop on environmental policy formulation.

The process of formulating public policy is largely unknown (or mystified) and uncared for by the majority of natural scientists. Most believe that scientists have a role only at the level of technical recommendations (actually this is the way the DMP project has been designed), while they can actively contribute to the whole cycle of the policy process. CIRAD has plenty of experience in training on environment policy yet we believe a more hand-on approach is needed for the DMP.

In May 27-28 CIRAD scientists have met in Dakar with Senegal's key players on sustainable development strategy, to design a new crash course on policy training suitable for participants with diverse skills and viewpoints. It is thought as a mix of approaches: situational strategic planning, hybrid forums, and hands-on experimentation. This concept will be presented to Senegal's DMP partners to assess how it can best correspond to their training needs.

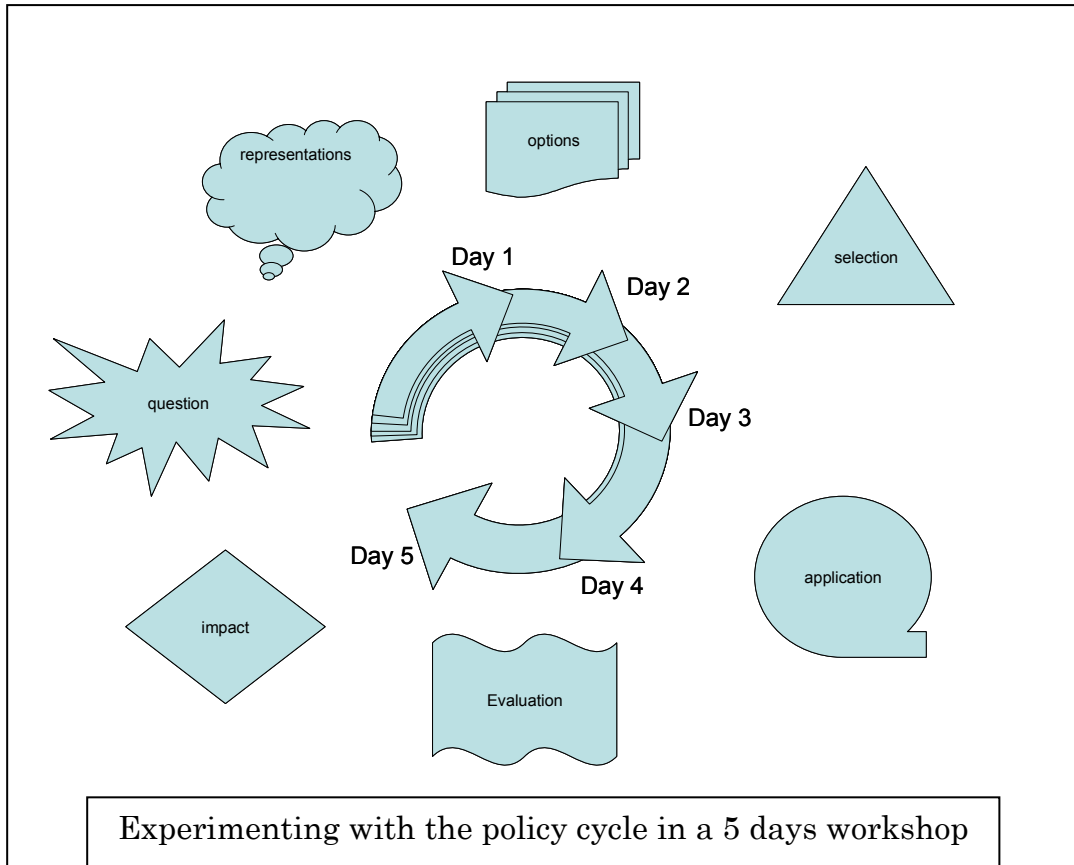
The 5 days course envisions a large number of participants (minimum) from different disciplines and spheres of interest. The idea is to avoid isolation of DMP scientists and partners by embedding them into the wider multidisciplinary group. The course will have to be tailor-made to suit country-specific issues and therefore has a national scope. The course will therefore be itinerant within DMP countries and a preparation phase will be needed in each country. In this preparation phase local instructors will be trained and key questions (hot, polemic or conflictive) will be selected as entry point to the learning phase. The course will start with a brief introduction on the genesis of public and private policy and the cycle of policy design.

Each day will then start with a question (complexity of the question will increase from day to day). Work groups will discuss the question and a debate will be stimulated in plenary. DMP scientists will therefore have the possibility to position their work in the larger (and relevant or hot) debate. Next each participants will have the choice among a set of mini workshops to improve his skills within a given stage of the policy cycle: some mini workshops will address theoretical issues for those who feel they need more theoretical background; Others will provide hands-on training on specific tools

(mediation tools, models, etc.); Other will just provide counselling (e.g. participants may want to develop their own method, browse the internet, or discuss with “experts”).

At the end of the course participants will not only have learnt that the socio-technical debate is vital for collective learning, but also will have gone through the whole cycle of policy design and improved their skills to deal with it.

We are now finalizing the plan of the course and are identifying the content and foreseen trainer for of each mini-workshop. We will shortly assess training needs with DMP partners and then submit a proposal to the DMP, to obtain matching funds for preparing the training material and run a first course in 2004.



Project management and reporting.

Project management load has been large as expected for any new initiative, and exacerbated by the long delay in the signature of the MOU (on CIRAD side). A lot of the project management work has been dedicated to the preparation and revisions of the CIRAD proposal, budget revisions, and MOU which was signed on 30 April 2004. Then we have set-up of a management and reporting system for CIRAD scientists based on the award winning Groove software (www.groove.net), have jump-started activities that needed DMP funding, and prepared this interim report. Dialogue with CEH and with national coordinators and partners has been initiated, but there is an urgent need by the DMP management team to pull together the STAT which is, according to the DMP project document, the main communication body with national DMP teams. The STAT would also be the main instrument for coordinating ARI and IARC activities within the DMP.

Although at least 85% of the project will be completed by June 30, it is likely that we will need an extension until the end of the year to accommodate time and staff constraints. In effect, the university calendar is such that students are not available at this time of the year, while they are key players of CIRAD development strategy; good consultants are not available on short notice; biodiversity studies will have to be done during the rainy season to take into account annual species and the presence of mobile people at their main camp sites. Another important aspect is the limited availability of partners for some activities (e.g. training in statistics) in June. An amendment to the MOU will be prepared shortly and submitted to ICRISAT.