



Agrimonde

*What scenarios for
farming and food systems
in the world in 2050 ?*

CTA 2008, Ouagadougou



ALIMENTATION
AGRICULTURE
ENVIRONNEMENT



Agrimonde

I – Objectives and approach

a tool to generate and discuss possible futures of farming and food systems at the global and regional scales

II- The “Agrimonde 1” scenario and the first conclusions

some key messages or questions on global / regional balances for ACP agriculture

Agrimonde

Objective : to explore possible futures of food and farming systems in 2050

- to envision the consequences of different possible science and technology scenarios for agriculture and food,
- and to anticipate and prepare for the future in terms of both organization and orientation of research
- to analyse different options for public policies and regulations
- to facilitate the participation of new, emerging actors to the international expert debate on long term food balance

Agrimonde

Organisation :

- Steering committee: scientific directors of INRA and CIRAD
- Joint INRA-CIRAD Project team (project development)
- Working group (15 researchers and experts : scenarios analysis/generation)



Agrimonde

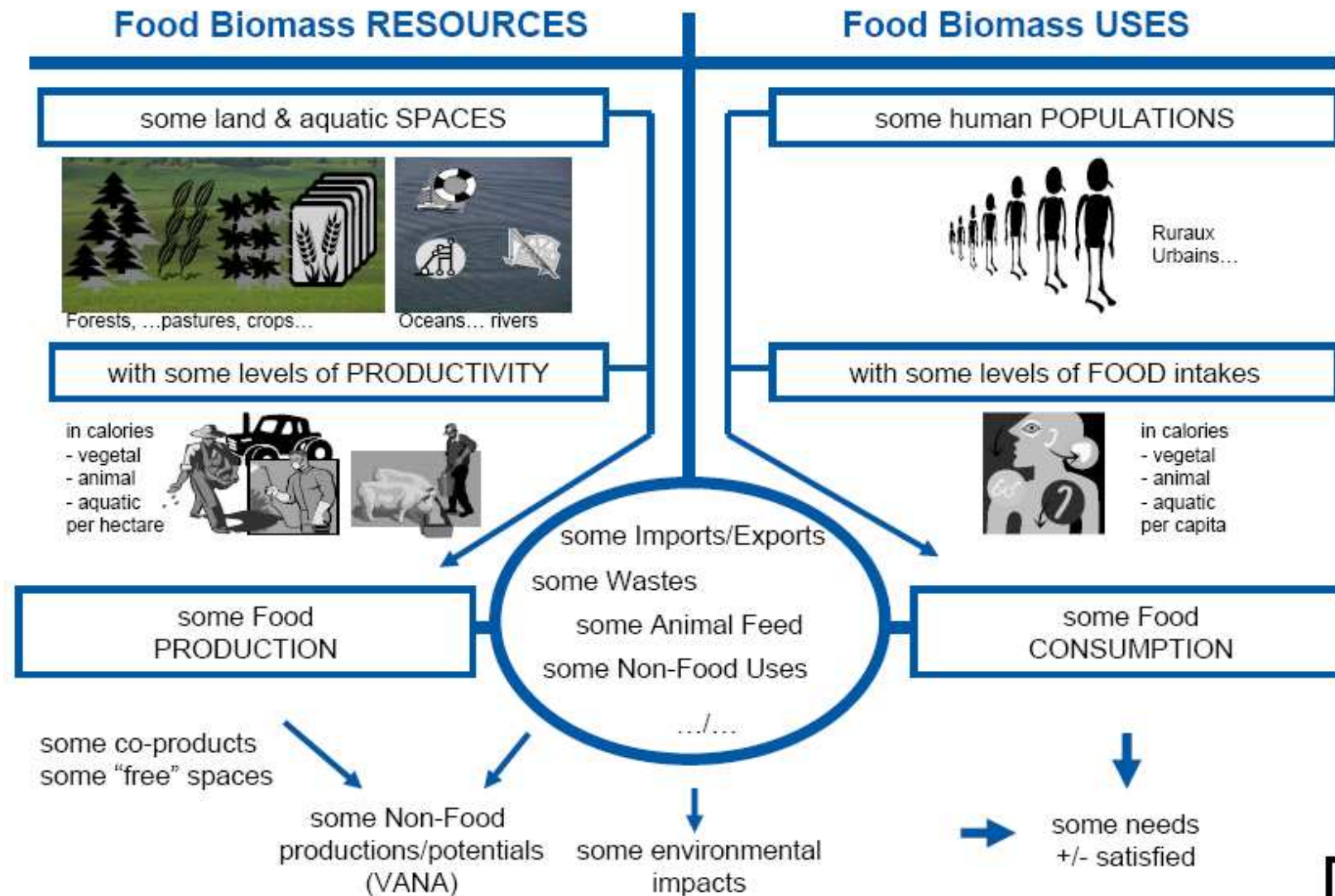
First cycle (2006 to 2008)

- Construction of a tool for collective analysis
- Analysis of the existing Millennium Ecosystem Assessment scenarios, in regards to food and agriculture systems
- Collective elaboration of the first Agrimonde scenario ("Agrimonde 1" scenario) designed in order to explore the long term pathways to sustainable development

Agrimonde : a tool for collective analysis

- a simple, **transparent tool useable** by participants in international debates on food and agriculture
 - > an alternative and complementary approach to global economic models
- a mixed quantitative and qualitative approach
 - the debate on 3 parameters (food consumption, cultivated land, yields) enabling discussion of other relevant dimensions of the system and their interactions

Agrimonde : a tool for collective analysis



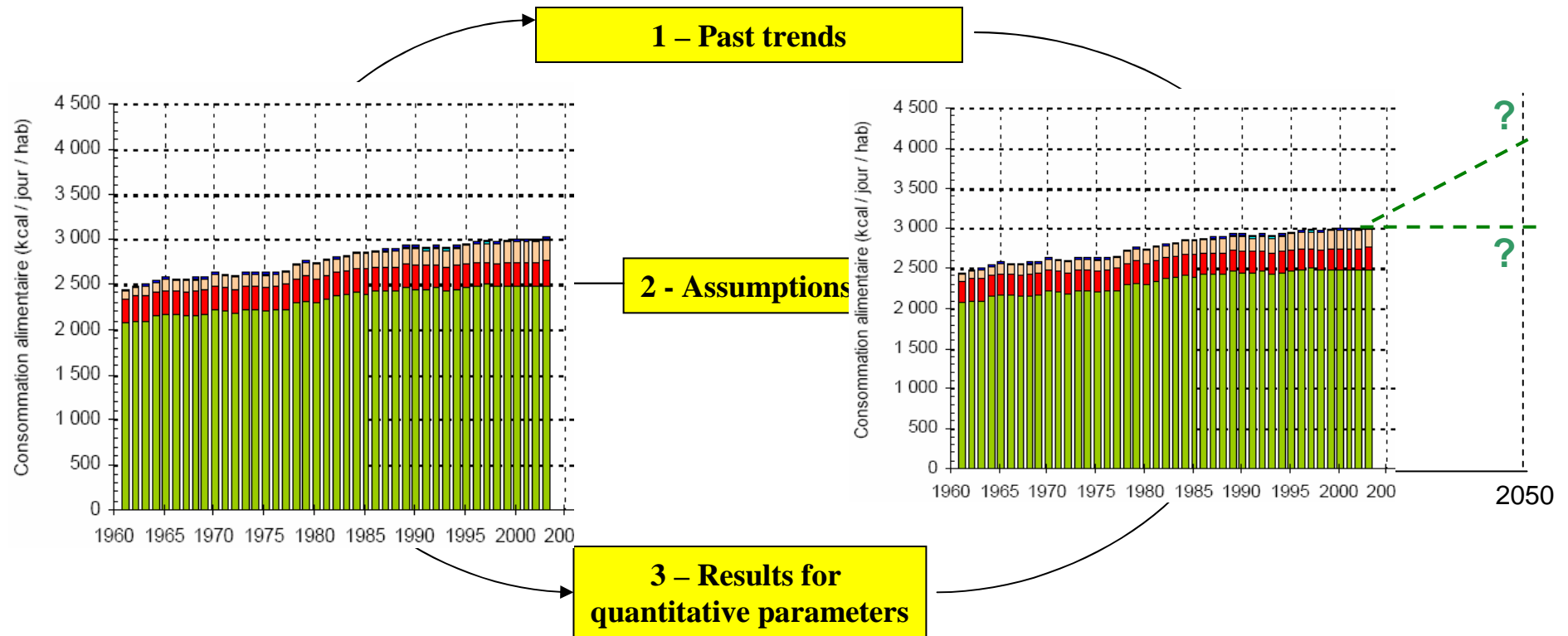
Source : Bruno Dorin



ALIMENTATION
AGRICULTURE
ENVIRONNEMENT



Agrimonde : the collective building of a scenario



Agrimonde

I – Objectives and organisation of the project

II- The “Agrimonde 1” scenario and the first conclusions

“Agrimonde 1” : a first scenario that differs from historical trends and existing scenarios

- Business as usual would lead to crises
- **The world of 2050 is not determined by current trends**
 - exploring plausible pathways to sustainable development in 2050

Basic principles of the scenario

- no large international migratory wave
- assess the capacity of each major world region to meet its food and nutritional needs by 2050 by its own production
- minimising impacts on ecosystems and considering roughly estimated robustness to climate change

“Agrimonde 1” : Main assumptions for 2050

- Apparent food supply per day and per capita
3000 kCal including 500 kCal of animal products
- Moderate expansion of cultivated land (global +40%, SSA +76%)
Less than in the scenarios of the MEA
- Moderate increase of yields (global +12%, SSA +30%)
 - same level as 2000 in Asia, OECD,
 - less than a 30% increase in Middle East North Africa, Sub Saharan Africa, and Latin America
- Regional food supply
Middle East & North Africa, Sub Saharan Africa and Asia
produce less than they would need



ALIMENTATION
AGRICULTURE
ENVIRONNEMENT



Sensitivity test : assumptions for 2050

- Apparent food supply per day and per capita
3500 kCal including 1000 kCal of animal products
- Important increase in cultivated land (global +60%, SSA +100%)
in particular in Latin America and Sub Saharan Africa
- Sizeable increase of yields (global +60%, SSA +100%)
even in Asia, OECD and Latin America
- Regional food supply
Middle East & North Africa, Sub Saharan Africa
and Asia produce less than they would need

« Agrimonde 1 » : global balance

It appears possible to feed the world in a sustainable way in 2050 but the room for manoeuvre is narrow :

- Sustainability in Agrimonde 1 suggests a **major shift** in **food consumption trends** is possible and might be useful to reach global and regional balances
- The sustainability of higher food consumption patterns can be questioned in terms of **robustness to climate change** and **impacts on the ecosystems**
- **Food exchanges** between regions are necessary

« Agrimonde 1 » : first conclusions (1)

Regulation of food exchanges

- Food exchanges are necessary even when exploring maximum regional autonomy
 - What regulation ?
 - The issue of access to international markets
- The scenario complexifies the usual dichotomy globalization/free trade vs. regionalization/protectionism (MA)

« Agrimonde 1 » : first conclusions (2)

Animal products and livestock are a central variable

- An important part of vegetal production is used as feed
- But pastures also play an important role
- trade off on land use or integrated systems

Biofuels : a question of energetic autonomy

- 2050 : 2nd generation of biofuels, no long lasting competition with food production
 - The issue of soil fertility
- The need for innovation is the following :
 - Design local production systems as autonomous as possible in terms of energy, using every kind of alternative energies



ALIMENTATION
AGRICULTURE
ENVIRONNEMENT



« Agrimonde 1 » : first conclusions (3)

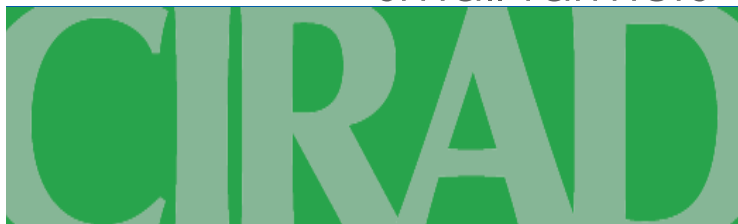
The challenge of “ecological intensification”

- Extension of cropped land is needed
 - Increasing yields is necessary
 - under climate constraints
 - maintaining ecosystem services
-
- A clear need for innovation, but different technology choices are possible...

« Agrimonde 1 » : first conclusions (4)

The options for “ecological intensification”

- Option A : First rely on classical intensification to increase yields, until some ecologically sounder techniques are available
 - but how to ensure small farmers access these classical intensification technologies ?
 - vulnerability of small farmers is increased by climate changes : is it possible to lower the risks they take with classical intensification ?
 - Reversibility of technological choices ?
- Option B : The agroecology innovation path
 - adaptation and mitigation as a supplementary urge for this type of innovation
 - would these kind of innovations be more accessible to small farmers ? When ?



ALIMENTATION
AGRICULTURE
ENVIRONNEMENT



« Agrimonde 1 » : first conclusions (4)

What innovation system for Option B ?

- Increase production relying on ecosystem services, and ensuring robustness/adaptation, and mitigation
 - Agroforestry and mixed livestock / agriculture system as examples
- It is essential to mobilise jointly local and scientific knowledge, and all actors along the value chain
 - Small farmers and scientists, urban farmers and consumers, farmers groupings, extension workers...
- **Diversity** as an asset and a challenge :
 - Biodiversity, diversity of production systems, differentiation on markets, diversified diets
 - Distributed innovation (vs. Green revolution) : design diversified systems, adapted to local ecosystems and situations
- **A fundamental challenge for communication**

Key messages

- Global and regional food balances scenarios appeal for a new innovation system, in order to make large scale “ecological intensification” a reality
- Climate change Adaptation and Mitigation reinforce this necessity
- Necessity to elaborate more robust global figures of the impact of climate change on potential cropland and potential yields
- **Invitation** to partners to participate to the international forum on future farming and food systems
 - discuss Scenario “Agrimonde 1” and raise new questions
 - **propose and explore together other possible scenarios**