
Editorial

Louis Job

Professor of Economics,
Department Head of Economics,
University of Versailles-Saint Quentin-en-Yvelines,
Laboratoire C3ED-UMR No. 63 (IRD-UVSQ)
E-mail: louis.job@c3ed.uvsq.fr

Amédée Mollard

Research Director at the Institut National de la Recherche
Agronomique (INRA), Grenoble Applied Economics Lab (GAEL),
INRA-University Pierre Mendès France,
Scientific Director of the INRA Programs PSDR,
("For and About Regional Development")
E-mail: amedee.mollard@grenoble.inra.fr

Biographical notes: Louis Job received his BA in Economics, Université Paris 1 in 1975, MA in Economics, Université Paris X-Nanterre in 1976 and PhD in Economics, Université de Nice-Sophia Antipolis in 1990. He is a Professor of Economics at Université de Versailles-Saint Quentin-en-Yvelines, 2004-present, Université de Nice, 2002–2004, Université de Metz, 1999–2002 and Senior Lecturer at Université de Nice-Sophia Antipolis, 1990–1998. His research interests are environmental and natural resources economics: water pricing, sustainable agriculture and landscape valuation.

Amédée Mollard is an economist of the INRA which works at the University of Social Sciences of Grenoble. He received his MA in Economics and Sociology, from the University of Lyon in 1964 and his PhD of Economics of the University of Grenoble in 1975. His research topics always deal with social questions put by partners related to agriculture. Currently, his work concentrates on two principal fields: environmental problems related to agriculture, and territorial development, related to the quality of the products and of the environment.

Agriculture is the predominant user of land in most countries, and natural resources as well as landscapes have been heavily influenced by centuries of farming. Even though there is some positive relationship between farming practices and environmental quality, we can lament the pollution and the losses of biodiversity resulting from the intensification and specialisation of agricultural production. We also emphasise that different agricultural policies have shaped not only the agricultural but also the rural development fields.

The six papers in this special issue of IJSD deal with different propositions to develop a sustainable management of agriculture and water resources. They do it from diverse

disciplinary points of view and on various and complementary scales, which give a more general scope to the analysis.

The first two papers stress on both economic policy and a socio-political economy approach. Both are developed on macro- and meso-economic scales (states, regions, important watersheds) in Italy, France, Australia and California. Cavalletti and Rocchi's essay concentrates on Italy, but it really concerns all European Union countries regarding the predictable effects of the reform of the Common Agricultural Policy (CAP), with the Decoupling of Farm Support that makes the support no longer proportional to production but rather to land, and encourages farmers to contribute to rural development and the environmental aspects. Thoyer's paper combines economic and socio-political approaches in order to deal with the management of conflicts between old and new water-rights holders in the perspective of a more sustainable water resources management.

The three following papers deal with practices, in particular agricultural, that generate pollution, and they combine some methodological and applied approaches aimed at favouring a sustainable management of water resources. These papers are rather different from the point of view of conceptual tools, theoretical models and implementation fields. These essays show well the interest, even the necessity, of taking into account various disciplines. We benefit here from contributions in economics, hydrology and law combined with political sociology. Blanquart's paper emphasises the economic tools that apply to horticulturists located in the Provence-Alpes-Côte d'Azur region. The paper by Biarnes and Colin relies on a hydrological model, and their study concerns a wine-growing region in the Hérault in southern France. Next, Belaïdi and Renaud-Hellier support their study with an institutional model and its application to a zone in the Saône river watershed.

The final paper by Requier-Desjardins, on the costs of desertification, with a seemingly different geographical and thematic essay, also addresses the question of the sustainable water resources' management. It concerns African countries where water management cannot be dealt with separately from land degradation and the decrease in productivity brought about by human activities and climate change.

We are now going to introduce each of these contributions in a little more detail.

B. Cavalletti and B. Rocchi (Italy): 'Efficiency grounds and welfare effects in decoupling farm support. Insights from an AGE model of Italian economy'

This paper deals with the application of the CAP in Italy and, more precisely, with the consequences of the 2003 Luxemburg Agreement adopted plan. This consists of adopting the decoupling of farm payments, i.e., the replacement of the support by prices to producers by direct payments and more specifically by the Single Farm Payment to the farmers. The authors aim at measuring the impacts on welfare by taking into account the effects on the efficiency as well as on the income redistributions.

In order to be able to measure the welfare variations on the Italian economy characterised by 17 production sectors and six households categories, out of which three categories of agricultural households have been singled out for their income level, the authors rely, as do other scholars, on an Applied General Equilibrium (AGE) to measure the outcomes of the structural policies.

In order to make a difference between the efficiency and the redistribution effects, their model is calibrated on an Italian Social Accounting Matrix (SAM), built on the input/output table for the year 1997, with data updated to the year 2000 and with

the addition of a sensitivity analysis. They carry out three simulations characterised by three different modes of payment of the lump sum transfer to different categories of consumer classes. Their survey allows a clear drawing up of the outcomes of the changes to the CAP tools, and they highlight the welfare improvement not only for the whole Italian economy but also for the low-income agricultural households. Finally, in the context of the World Trade Organisation negotiations, they suggest that those gains will be increased by suitable measures in favour of innovations and differentiation in the agricultural sector.

S. Thoyer (France): 'How to reallocate water rights when environmental goals conflict with existing entitlements'

This paper deals with ways of sorting out conflicts related to the use of water resources against the increasing environmental preoccupations aimed at preservation (biodiversity, habitat, landscapes and linked recreational activities). This concern for sustainable water management translates in most countries into legal, regulatory and policy measures aimed at preserving minimal flows in rivers, implying a limitation for water-use rights and possible conflicts with the traditional rights-holders. How should this new scarcity be shared between old and new water users?

In an attempt to answer that question, this article compares three different policies in three very different countries: France, Australia and California. The policy measures show that the decentralisation process and the adoption of voluntary agreements between users for water management are always preferred to the direct involvement of public water agencies, even in the case of an existing legal framework allowing more stringent solutions. This could explain why political authorities much prefer sharing modes that are acceptable to all users and therefore more perennial. The range of solutions vary within the existing regulations' legal framework: negotiated reduction of water use with some individual or collective compensations, permanent or temporary buyback by a public water agency of the licences owned by private rights-holders (through auction or negotiation) or contracts aimed at reducing the water use for a given period, thanks to water-saving practices or technologies, with a given subsidy. The author compares those different solutions and assesses their relative performance in terms of efficiency, budgetary costs and information needs. She tries to answer the questions related to the modes of allocations for water restriction and the compensation payments and the means to simultaneously pursue efficiency, equity and acceptability objectives.

S. Blanquart (France): 'Multi-criteria decision aid: local method for sustainable management of groundwater quality in the agricultural sector'

This paper deals with the impact of agricultural activity on the quality of water resources and underscores the mediocrity of the French present situation. More precisely, it considers that the main causes of water pollution are the uses of fertilisers and pesticides.

In order to succeed in a sustainable agricultural policy, the author starts her analysis with a criticism of the traditional incentive instruments and maintains that informational control is the most important variable on which we must act. Then she explains that multi-criteria decision analysis is a particularly suitable method and introduces its essential concepts and protocol. She notes the importance of the diversity and the heterogeneity of the data and on the information transfer process. Otherwise, among several sustainable agriculture methods, she considers the technique of Integrated Biological Protection. Once the methodology has been presented, she uses

the ELECTRE software in order to compare several horticultural farms located in the Provence–Alpes–Cote d’Azur region of France, and this allows her to identify and classify the farms most likely to adopt a sustainable practice. Finally, she explains the reasons driving the actors involved (scientific, technical and financial partners) into appreciating the methodology, and she touches on certain limits in her study and makes some proposals to extend her work.

A. Biarnes and F. Colin (France): ‘Methodology to assess the hydrological impact of weed control practices with a view to management of Mediterranean winegrowing catchments’

This contribution covers both the methodological and the applied fields. The authors propose a procedure based on an integrated approach to water resources and link a hydrological model to different weed-control practices. The aim is to measure and combat pollution owing to pesticides. The hydraulic conductivity of the soil surface is associated with different weed-control practices. The authors underscore the need to collect data in order to allow the hydrological model to simulate. In the study, they apply their model to communes specialised in winegrowing, located in the Peyne river basin valley, in the Hérault region. Their model is applied to soil surfaces subjected to two episodes of flooding and also having been treated by the winegrowers. The authors propose to generalise, in time and space, the hydrological modelling approach, as it could be useful for water resources managers.

N. Belaïdi and E. Renaud-Hellier (France): ‘On sustainable management in the local governance of water: a prospective localised study’

This contribution deals with the existing local tensions over water resources in the greater metropolitan area of Dijon, France, with the regulatory modes and their limits, and with various scenarios of evolution in order to favour the sustainable management of water resources. The tensions over drinkable water in the Saône river watershed, upstream from Dijon, are linked to relations between the need for drinkable water and activities generating pollution through nitrates. The authors underscore that the multiplicity of management partners in the governance process and the fragmented answers prevent a global vision and constitute a major obstacle to an efficient water policy. They describe the case of Norges-la-Ville as an example of conflicts over water resources, and they mention the difficulty of dialogue and the misunderstanding of the ‘civil society’ role.

The evolution of governance and various management scenarios are then discussed. The authors set apart the solution and give greater importance to the market economic mechanisms, a management combining the regulatory frame but with the biggest role given to the territory and, finally, a scenario supported by a greater involvement of citizens and users. The authors think that for the management of environmental matters, the inter-communal authority is best suited and that governance mechanisms should give the highest participation to the ‘civil society’.

M. Requier-Desjardins (France): ‘The economic costs of desertification: a first survey of some cases in Africa’

This paper synthesises the results of several surveys made on world and national scales, in four North African and seven sub-Saharan countries. The desertification that is analysed here is not owing to the expansion of existing deserts. In the arid, semi-arid and dry, sub-humid areas, it results above all from land degradation and the decrease in

land productivity owing to human activities and climate change. It increases when the ecosystems in those areas become sensitive to the over-exploitation and to non-sustainable methods of land and water resources' management. In the context of poverty, an unstable political climate and unequal international trade, the deforestation, the overgrazing and the bad practices of irrigation and water management are factors that cause deterioration in soil productivity and favour cumulative erosion.

The paper describes the main methods used to assess the economic costs owing to this desertification, by the monetary valuation of the uses and non-uses of natural resources and the environment, or through the modelling of yield losses owing to erosion and nutrient loss, or from observation centres or experts reports, or from spatial and data-based approaches. The limitations of these different macro-evaluations are highlighted, in particular, the fact that the results taken into account are mainly linked to agriculture and underestimate the indirect spatial effects or ignore the observed temporal variabilities in the data. Despite those reservations, the obtained results, measured in terms of GDP or total agricultural production percentage, show the importance of the inflicted losses and the major obstacle that they present for rural development in Africa. This survey, dedicated to several rural African developing countries, shows the risks of an insufficient or non-existent regulation.