FOREWORD

Dear Reader of the Euromarket newsletter,

As the end of the project is approaching, we are happy to invite you for the EUROMARKET final conference which will take place on December 14th, 2005 in Lausanne. You can already register on our website and find the preliminary program of the conference. We hope to see many of you at this conference and debate about the identified scenarios, their implications, and the different recommendations for policy makers in the water supply and sanitation sectors (WSS).

After having elaborated scenarios on the likely evolution of the WSS in Europe, the partners of the project have now examined the economic, social, environmental and institutional implications of the different scenarios. These implications are presented in the editorial of the newsletter and the complete deliverable for each issue is available on the EUROMARKET website.

Thank you for your sustained interest in our publications and our project.

Matthias Finger, Scientific co-ordinator of the EUROMARKET project, Swiss Federal Institute of Technology in Lausanne (EPFL).

EDITORIAL: PHASE FOUR EUROMARKET:
IMPLICATION OF THE SCENARIOS

The editorial presents the result of the four WPs that address the major implications in economic, ecological, social and institutional terms of the six scenarios (cont).

HIGHLIGHTS

- Final conference: EUROMARKET project, 14th December 2005 in Lausanne: please register here.

CURRENT Debates:

In France, a recent study evaluates the relations between the price of water supply for the delegated services and technical complexity, local specificity and competition. Its results tend to show that, beyond complexity, other factors like the way of negotiating may influence the fixing of the fees intended for the firm. (cont).

Note: The current debate section is not an outcome of EUROMARKET and it does not necessarily reflect its views.

STAKEHOLDERS’ VIEWPOINTS ON LIBERALISATION

This section is open to the participation of the different stakeholders in water supply and sanitation sectors. These contributions do not necessarily reflect the views of the EUROMARKET project. In this newsletter, Arnaud Courtecuisse, Economist at the Agence de l’Eau Artois-Picardie (one of the french river basin authorities), wrote an article on Water prices and households’ available income (cont).
Report on Work Package 6

Work package (WP) 6 analyses the economic implications associated with the six End States identified in Deliverable 5. Our analysis of economic implications addresses the degree of effectiveness and efficiency with which the water supply systems, under the several scenarios, are able to respond and react to various, diverging societal and environmental demands. Three main sets of criteria are distinguished. \textit{Rents and their distribution}, as a reflection of the direct operational and management characteristics and the role of the several stakeholders in the value chain; \textit{Investments}, as a reflection of the objectives of the system managers, as well as the potential to mobilize the resources required for investment, both for improving the system and for maintenance or replacement; \textit{Supply characteristics}, as a measure of the output of the water supply systems in terms of shorter and longer term social and environmental utility and technical, environmental and market related characteristics along the value chain. For the six End States, a number of observations can be made:

In respect of \textit{Delegated Contracts for a longer duration (10-15 years)}, the performance of the firms involved and the trade off between objectives, interests and outcomes are determined very strongly by the quality of the contractual and concessionary framework and the role of the regulator. Given a sufficient degree of competition, the main challenge is in striking an acceptable balance between several feasible objectives and interest. Whereas the public authorities may have succeeded in reducing their direct financial and operational involvement, now there is the need to formulate regulatory adequate guidelines. This happens, firstly, in setting and negotiating the concessionary agreement, and later in the process of monitoring and (re)negotiation of terms. This context is extremely vulnerable to strategic behaviour by means of regulatory capture, asymmetric access to information, etc. A prerequisite for this approach is that substantial resources have to be committed to maintaining or developing an adequate knowledge-base, to master the development of the sector. Also the often associated public ownership of assets requires a development of a longer term perspective for the infrastructure and for the (bulk) supply system. Another main requirement is that there has to be enough competition between a sufficient amount of serious contestants.

\textit{Delegated Contracts of a shorter duration (5 years)}, the performance of the firms involved and the trade off between objectives, interests and outcomes tends to short term, low cost solutions either, or an abandonment of the sector all together, when the private risk is considered too high. The implication is that this approach may not be the most effective way of coordinating a developing water sector, or a sector in which large (environmental) problems have to be solved. Basically, for a well kept, stagnating or declining system, it may be the appropriate way of managing it, at low cost for public authorities. Also the tendering process can be rather straightforward and standardized, as low cost is the main criterion. What may get lost, probably, is the longer term perspective over asset and resource management. Moreover complex socio/political and environmental issues may be suffering. Lack of a real regulatory agency, most likely implies a non-existent institutional memory on the public side, which downplays the possibility of evaluating private concessionary’s behaviour.

\textit{Outsourcing of non-core activities} may involve either competitive public procurement for larger lumps of activity, or direct procurement of specific tasks of a limited dimension and duration. The sub-contractor does not share any operational risks. Outsourcing can take place under many regulatory models. The focus of this End State is on enhancing efficiency and rationalizing the operational process of the firm. The trade-off between objectives, costs and outcomes are determined by the capability of the management to decide, firstly, what to outsource and what to retain and, secondly, to evaluate and monitor the tenders and the work in a realistic manner. Both requirements are not automatically present in firms and need to be developed. This often catalyzes other processes of changes as well, including shifts in the composition of the staff. It is obvious that the collection of rents, either by the firm or its consumers is a function of the further policy setting and the regulatory framework. In respect of the subcontractors, the degree of competition is important. A balance has to be found between too loose relationships, which are intensive in knowledge exchange and transaction cost, and to rigid relations, that lead to a disappearance of the competitive pressure.

The \textit{Regulated Monopoly} end state is characterised by high-powered benchmarking with a centralised regulation of private firms or medium-powered benchmarking with decentralised regulation in

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systems with municipal influence. Three sets of drivers determine the economic performance of the regulated systems. Firstly, the long term supply monopoly provides a high degree of certainty and adequate incentives for the management of assets and investments. Secondly, it also implies that potential monopolistic rent-seeking behaviour of operators has to be controlled, either via stringent regulation or by softer benchmarking, seeking a balance between adequate revenues and consumer protection. Thirdly, given the more or less stringent cost-plus style of controlling revenues, more income can be generated only by adding activities to regulatory asset base. This, either, drives horizontal expansion via the addition of (adjacent) supply territories, or vertical expansion, via the development and application of new technologies, recognized as being useful by the regulatory authorities. This may provide economies of scale and scope and incentives to improve the quality performance of the sector, possibly via the internalization of (environmental) external effects. The increase in scale of the firms and the associated decline in the number of operators in the market make it increasingly difficult for the regulator to acquire insight in the costs functions of these activities, to set reasonable levels of remuneration.

Under Direct Public Management regional bodies keep direct control over the management, the operation and the financing of water services. Depending on political decision-making, budgets and principal-agent relationships, these systems may provide a high quality water supply to the entire community, or just a mediocre, sub-standard service. A number of drivers seem important. Firstly, as a consequence of the WFD and in response to lagging maintenance and expansion, considerable investments may be required. As public entities rely increasingly on semi-private sources of funding, like pension funds and bonds, part of the risk is transferred to the investors. This requires considerable efforts to account for their performance and the (cost) effectiveness of management practices. Secondly, larger local scales of operation may increase economic efficiency, supported by good accountability and transparency, activity based-costing, full cost recovery and light benchmarking and oversight. Outsourcing and tendering of inputs may contribute to enhancing the municipal systems’ access to technology and operational strategies. Another important factor is the application of modern (asset) management strategies allowing for specialization, quality monitoring and the coordination with other public services. Thirdly, generally, politicians and public operators stress security of supply, high coverage of territory and a responsible approach towards the several environmental and social external effects, as main arguments to retain public management.

As regards Community Management, a wide range of variants can be observed with all kinds of peculiarities and specific local characteristics. This large variety makes it difficult to draw general conclusions. Consumers or stakeholders are the owners of the infrastructure and bear the full exploitation risk of the systems and, unless they can rely upon subsidies. Consumers must cover the costs of operation and maintenance (O&M) and investment capital through tariffs. The funding of the supply system depends upon the communities arrangements for allocating expenses to its members. Depending on community decision-making, budgets and principal-agent relationships, these systems may provide a high quality water supply, or just a mediocre, sub-standard service.

Overall, WP 6 has shown that there are fundamental issues at stake in determining the precise role and localization of the main components of system operation and asset and risk management, as a function of local peculiarities. One of the main peculiarities in this respect, in addition to the physical and spatial features of national systems, seems to be in the manner in which the different End States deal with the availability of knowledge and insights, in the several private, public administrative, political and regulatory corners of the system, and the use thereof in the several decision-making processes. This latter aspect, certainly, deserves more attention in future research projects, because the appropriateness of End States, or whatever regulatory models, will depend on it.

TU Delft (Lead participant of WP 6) (Home)

Report on WP 7

Work Package 7 analyses the environmental implications of the six scenarios developed during the previous phase of the Euromarket project. As the Water Framework Directive states it, „Water is not a commercial product like any other but, rather, a heritage which must be protected, defended and treated as such“. Most importantly, water resources provide the basis for our existence and cannot be replaced. Guaranteeing a sustainable use of water resources is therefore a key priority, and this concern lies at the centre of the work package.

The analysis is based on a set of sustainable water management indicators. These indicators are derived from ten principles, including among others the precautionary and the regionality principles, and are

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grouped together according to their relevance to three major aspects of the water sector: i) the protection of water resources and water quality, ii) sustainable drinking water supply, and iii) other water uses and sectors. The structure of each scenario analysis reflects this classification.

The length of the contract is a recurring factor. At least two scenarios give companies a limited time frame to plan and invest: In Scenario 1a, bidding procedures take place every 10 to 15 years, in Scenario 1b every five years, and though the outsourcing scenario does not specify any time frame, contract duration could vary greatly from short to long. This factor has a considerable influence on companies’ decisions. Indeed, the water sector is characterised by the fact that it requires important investments in infrastructure and its maintenance and by a cost-structure with 80% fixed. The investments do not translate into benefits before a long period of time (sometimes as long as 50 to 100 years) and the rates of return will tend to remain low. This means that companies with a short contract will have little interest in long-term investments in infrastructure maintenance and extension (the latter only in the case of concession contracts where the operator is responsible for this task), especially if they intensively search for cost reduction opportunities. This leads to a reduction in infrastructure quality, especially after a long time without appropriate maintenance and can also cause economic problems when the contract expires. Furthermore, the companies will most probably neglect precautionary measure, such as agreements with farmers to promote less polluting land-use and keep nitrate rates low in the long term, and favour end-of-pipe solutions, such as technological treatment of nitrate polluted water. The direct public management and the community management scenarios on the other hand offer a quasi unlimited time frame in which to plan. Implementing precautionary measures then becomes economically sensible, despite the fact that the benefits of such measures appear only after several years, provided that the municipality has appropriate funds for the investment. However, political issues take on an important role in this scenario. Indeed, the municipality will need to achieve a balance between various interests and priorities in a transparent manner in accordance with the principles of good governance. Urban, industrial or agricultural development should be implemented in parallel with an appropriate level of water protection.

Another important factor is the regulative framework in which companies operate. The indicators used for setting the prices and regulating investments in Scenario 1a and Scenario 3 will determine the environmental implications that are to be expected. Indeed, the regulative framework defines which investments can be recovered, for instance through an increase in consumer prices. If this framework does not leave much freedom for infrastructure maintenance or does not consider precautionary measures, the water providers will have little incentive to include these measures in their annual investment programmes. This is especially the case if the regulative system is based on the so-called economic level of leakage (ELL). The ELL is usually defined as the level at which further leakage reduction costs the water supplier more than to produce water from another source. In this context, water operators have no incentive to invest in infrastructure measures to reduce the leakage level below ELL. This increases the tendency to exploit alternative sources potentially leading to a higher level of chemicals and energy required for the production of drinking water. The ELL can however be defined in an holistic way and also include environmental and resource costs and other costs born by society as a whole.

Finally, the level of monitoring water providers are subjected to has considerable consequences. The analysis of the delegated management and outsourcing scenario found that water providers could potentially keep certain information undisclosed until the end of their contract, possibly leading to irreversible environmental damages. A monitoring that includes criteria of security of supply, drinking water quality and water resource protection could ensure that contractors do not take advantage of their freedom of operation to the detriment of water resources. However, in the case of delegation management, the municipality has lost most of their economic and technological expertise which makes the task of monitoring more difficult.

As regards the repercussions on other sectors, one should particularly focus on the agricultural sector. Indeed, agriculture plays a double role in the water sector: On the one hand, it benefits from and needs clean water resources available at low costs. It benefits, be it in the short-term, from using such potentially polluting substances as fertilisers and pesticides. A balance needs to be found between the sector’s long and short-term interests, keeping in mind the difficulty of depolluting water resources once the damage is done.

Ecologic (Lead participant of WP 7) (Home)
These two criteria (access and employment) are measured according to different indicators. Access includes rate of connection, social funds, social policies of companies, even (or uneven) distribution across different geographical areas, and tariff principles. Employment includes the number of workers employed, the nature of employment contracts, working conditions, and equal rights of workers. In order to evaluate the implications, the analysis is based on existing literature, general statistics and case studies (Berlin, Paris, Nantes, Ravenna, the OFWAT case study, Grenoble, Dŵr Cymru Welsh Water and Yorkshire Water).

For end state 1a (delegation contracts and strong regulation), regarding access, compulsory social measures exist at EU level; the respect of public service obligations is ensured: disconnection is forbidden (and "self-disconnection" is also prohibited), and social funds must be put into place in all countries. The principle of right to water is therefore recognized. Hence, this scenario does not raise many questions regarding access and is a clear improvement in social terms compared to the current situation. Regarding price increase (as case studies usually suggest) with delegation contracts, this will be moderate due to price cap regulation. This price increase may not be linked to the change in management modes, but to both increasing investments (to conform to water quality and sanitation EU directives) and the fact that the operator must recover costs with the price (whereas in public management this can be done through taxation). Unless regulation includes the prohibition of job cuts, employment will have a tendency to decrease in countries where no legislation protecting workers exists (like in France).

As for end state 1b (delegation contracts and extreme competition), regarding access, prices may vary significantly after each delegated management contract (i.e. lease or concession contracts). The assumption is usually that competition leads to a decrease in prices, as companies compete for the market every 5 years. However, competition for the market can be limited, and one could also observe no price decrease. Regarding poor households, unpaid bills will lead to water cuts in countries were this is allowed (see annex 1 developed in our final report). The nature of employment contracts changes: the latter are short-term employment contracts (5 years), representing more job insecurity. There will be a tendency to reduce the number of employees, because of the nature of competition (obligation to select the least costly bid) that leads to cost savings in all segments of the operating firm.

In end state 2 (outsourcing), regarding access, cost savings through outsourcing may implicate lower tariff levels. Regarding employment, there is a decline in the number of employees in the managing company responsible for delivering the services. When an activity is outsourced, the workers of that department are generally transferred to the companies in charge of the outsourced tasks, which brings about a reduction in the strength of a unit for negotiations with management. This may lead to compromises in the decisions taken with regards to job security, decent wages and better working conditions.

Regarding end state 3 (regulated monopoly), social implications depend on the extent of benchmarking (if benchmarking is compulsory and if there are sanctions or not), and the importance of diffusion of information. Additional information on price, quality, employment, etc. does not imply that it is easily accessible and comparable (the example is that of social performance indicators of private companies).

As for end state 4 (direct public management), the scenario provides that disconnections are banned which therefore guarantee a right to water for all. Furthermore, tariffs are based on cost recovery and there are no direct subsidies. Regarding employment, the nature of contracts are very secure (i.e. civil servants).

And finally, for end state 5 (community management), regarding access, as the community itself is responsible for setting tariffs, these will be kept low. Employment also concerns volunteers. As participation can be in the form of free construction labour or as caretaker of the system, it will result in less number of paid employees. There will be no need to hire the people to do the job from outside the community.

*Université Paris VIII (Lead participant of WP 8)*

[Home](http://www.epfl.ch/mir/euromarket)
Report on WP 9

Work Package 9 (WP9) analyses the institutional, legal and organisational (ILO) implications of the European scenarios for the evolution of the water supply and sanitation (WSS) sector developed in the previous phase of the project.

The concept of institutions is used in a broad sense and includes all relevant actors, and in particular the (formal and informal) rules and norms governing their relationships. Legal implications pertain to the relationships and aspects in the scenarios established by or founded upon law. These include laws and norms set up at several levels, namely European, national, river basin and local levels. Finally, organisations are social units (or groups of human beings) deliberately constructed and reconstructed in order to pursue specific goals.

The analysis of the ILO implications of the different scenarios is based on a set of criteria derived from established bodies of literature. Three criteria – stability, efficiency and legitimacy – were derived from organisational, transaction cost, and governance theories. In order to assess the scenarios on the basis of these criteria, we also define for each one a set of indicators. Moreover, the ILO implications of scenarios are assessed within the institutional framework specific to each end state.

The analysis identified some features that might be generalized for each scenario. It is interesting to look at the outsourcing and regulated monopoly scenario together since their competition processes may coincide with different forms of organising the sector. The strong features of these scenarios pertain to the high levels of incentives to perform, created by the competition level in supplier market in Outsourcing and benchmarking in Regulated Monopolies. The main challenges in ILO terms of both scenarios pertain: (1) in Outsourcing to the possibility that competition in the supplier market is constrained by a tendency of outsourced firms to concentrate, and to the loss of internal competencies of the operator; and (2) in Regulated Monopoly to the fact that accountability goes through binding benchmarks organised by public bodies not necessarily fully independent, and to the low level of public participation (it should go beyond information dissemination).

Concerning both delegated management scenarios, these scenarios have different ILO implications. The strong features of both relate to the efficiency and stability-related indicators. The level of efficiency is linked to (1) high levels of adaptability, especially in Delegated Contracts and Extreme Competition due to the shorter length of contracts, and (2) incentives to perform, created by competitive tendering processes and regulation (in the case of scenario 1A. Strong Regulation). Concerning the stability criteria, the main advantage of these frameworks come from the balance of powers between actors (in scenario 1A) and the coherence in the allocation of functions and tasks (in scenario 1B), as well as from the existence of conflict resolution mechanisms (in both scenario 1A and 1B). From our empirical analysis, one of the areas of concern in Delegated Contracts is legitimacy - especially in what concerns public participation. Public participation can however increase if the local public authority decides to involve different stakeholders, and in particular consumers, for example in the planning of long term investments in sustainability and improving of the water systems as a whole.

With regards to the Direct Public Management scenario, our ILO analysis showed that this scenario is built on strong legitimacy. The legitimacy comes from the dominant position of the local authorities which at the same time control the supplier and are accountable to the voters/customers. The main question with regards to this scenario relates to the potential lack of incentives to perform. These incentives can however be developed in the framework, not necessarily focusing on financial goals, but including more qualitative preoccupations in terms of environmental protection, social equity, and quality of the service.

Finally, the Community Management scenario is characterised by high levels of legitimacy arising from (1) strong right and access to information, (2) operator directly accountable to other actors, and (3) strong public participation. Moreover, this scenario can, with appropriate mechanisms, develop reasonable levels of efficiency. However, some concern may be voiced concerning the alignment of operator and consumer objectives as it may likely undermine the role of the responsible entity – although tasks pertaining to service quality regulation will probably remain. In addition this alignment is likely to enhance the position of suppliers – both as the providers of the new technology and as likely operators (as the larger social enterprises will probably opt to outsource their management operations to the private sector).

The identified scenarios are theoretical constructions on the possible evolution of the water sector in Europe. This means that the organisation of the water sector and its institutional implications in 15 years’ time will as well depend on the specific characteristics of local systems. We mean by this

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that any of the conclusions presented in this report should not be extrapolated to all the situations. These conclusions pretend to improve the knowledge set of policy-making actors, namely calling their attention to important issues that are related to particular features of the scenarios.

EPFL (Lead participant of WP 9)

CURRENT DEBATES

The setting up of water prices in delegated water services in France: a quantitative preliminary study

In a recent study (1), the relations between the price of water supply for the delegated services and technical complexity, local specificity and competition were evaluated. Its results tend to show that, beyond complexity, other factors like the way of negotiating may influence the fixing of the fees intended for the firm.

In France, local public authorities, that are responsible for their water supply and sanitation services, have the choice between different modes of organisation, among them direct operation (régie) and delegation (affermage or concession). The price of the delegated water services constitutes the core of numerous debates. Direct operation implies a yearly defined price, that is in direct relation with the operation costs, through accountancy rules. On the other hand, if delegation is chosen, the price is defined as a forecast, once for the duration of the contract. This procedure consists mainly in a call for bids and in a negotiation, and allows finally the private firm to charge the customer from the signature of the contract of delegation, in return of contractual obligations. A specific advice is frequently requested by the local councillors for this heavy procedure of delegation. The water price is usually argued to be dependent on technical complexity, local specificity, or to competition issues, but these relations have never been obviously proved. In order to shed light on the variations of the price over the French territory, the laboratory GEA has led a study on the basis of 2 databases gathered through the whole country.

First of all, the private firm’s revenue related to the volume sold reflects well the financial balance of the contract and allows adequate comparisons; the price of the delegated service is hence defined in this way, in this study. Few studies have been made on this basis despite the growing water-related empirical literature. The relationship between the unit revenue of the private firm and the technical specificity of the services, defined, as a first approximation, as the scale of the service (consumption, number of users, density of the network) and also as the abundance and the quality of the water resource (imported volume and treatment), turns out to be effective but clearly not sufficient to explain the water price. These variables may also be relevant for quantifying the activities of a drinking water service (namely production, distribution, operation and customer service including invoicing). A simple statistical fit (log-log regression) has been used given the data. The influences of the variables, that are all significant, are in accordance with the intuition. Particularly, the scale variables permit to explain the majority of the variations of the price. The result is that the modelled price is close (with a margin of error of 20%) to the real one for 56% of the services. With this data, it was impossible to proxy the division of the tasks between the firm and the local authorities. It was neither possible to take into account concessive investment, but it rarely occurs in our sample.

As technical reasons are not sufficient to explain the water price, other factors have been taken into account, showing for instance that the number of bidders is not a good proxy for competition, in comparison to the feeling of competition by the local authorities. But it mainly proves that outsiders (when they win contracts) are cheaper than the bigger companies, and that competition allows a decrease of the price. The study has shown that an additional cost evaluation by the local authorities may help to make up for the lack of challenger for the outgoing firm. The model, strengthened by additional non-technical variables, allows to proxy the real price for 60% of the utilities with the same accuracy as above.

The water price is contractually based on the forecasted costs through the projected account of

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the operator. Nevertheless, the comparison of the structure of this forecast with the one of the financial report, representing the carrying out of the operation, shows great differences since some elements (labour force, overheads, own investment, subcontracting, taxes, others) are not generally used in the foreseen proportion. This result highlights the problem of asymmetric information between the outgoing firm and the local authority.

Evolution and indexation on the inflation of some "inputs" may be the source of price distortion. It is shown that this evolution formula reflects globally well the structure of the foreseen costs, but not the effective cost structure presented in the financial reports.

In summary, local technical effects seem to have a significant impact on the price, and a large part of it can be explained by the quantity of water sold and the number of users. Moreover, competition helps to refine this result. As we cannot explain the whole price with these variables, we may conclude that there is space for the local authorities to negotiate a better price and better evolution criteria for it.

These results have to be confirmed, through a particular study of the services which were badly modelled, in order to find out the reasons of the gap: either every variable that could characterise a utility was not taken into account, or the services on which there was data may have a local specificity. This opens also on the need of a more precise study of the negotiation conditions: this will probably permit to highlight the ways by which the local authorities could improve their delegation results.

(1) Available in French at [www.engref.fr/labogea/cagea3.pdf](http://www.engref.fr/labogea/cagea3.pdf)

Guillaume Fauquert and Laetitia Guérin-Schneider
(Guillaume Fauquert is a PhD student and Dr Laetitia Guérin-Schneider is the Director of the GEA Laboratory on the Management of Drinking and Wastewater, UMR G-EAU, ENGREF).

(Home)
1. Introduction

The investigations carried out for the implementation of the Water Framework Directive have undertaken a specific analysis of the weight of the water services bill for the households of the Artois-Picardie River Basin. In this basin of 5,000,000 inhabitants, the mean price for a cubic meter of water is 3.28 euros in 2004 (inc. water distribution, collection and treatment of waste waters and environmental taxes) but this price can reach 5 euros and more in some specific areas of the basin. Unfortunately in some areas of the basin, these high prices can be combined with low mean available income per inhabitant (the ratio for Artois-Picardie basin is 20% lower than the national ratio).

2. The price of the water services in the Artois-Picardie basin

In France, the public services of water distribution and sewerage (i.e. collection and treatment of waste water) are under the responsibility of each municipality (there are a bit more than 36,000 municipalities in France and 2,448 in the Artois-Picardie River basin).

Each municipality can choose to run its public water services or delegate – through a specific contract – to a private company. In each case, the municipality remains responsible of these public services. Furthermore, a directive from the ministry of finance and budget regarding the accounting rules of water services states that the accounts of these services must be isolated from the municipality’s general budget and balanced (i.e. the incomes from the water bill paid by users must cover the costs of the services – this is the “water pays water principle”).

The level of water price for a municipality depends of:

- investments made for the services
- operating and maintenance costs
- the way water services are managed (direct or delegated management)
- water resource context

In 1994, the Artois-Picardie water agency set up a specific survey in order keep an annual record of the water prices (i.e. price paid by households for public water services) in the 2,448 municipalities of the river basin.

In 2004, the survey covered 95% of the population of the river basin (and more than 2,000 municipalities). The data for each municipality are available through a website free of access.

The following figure shows the evolution of mean water price on the Artois-Picardie river basin from 1994 to 2004.

3. The assessment of the available income per household

The main objective of this study was to have at the same scale as the water price (i.e. municipality) information on the mean available income per household.

The data from national statistics office (INSEE) were used. The “fiscal income” – calculated by the INSEE for all the municipalities with more than 50 household was collected for 2,129 (on a total of 2,448) municipalities of the Artois-Picardie basin.

Then the mean available income has been calculated from this fiscal income.

http://www.epfl.ch/mir/eur onstage
The mean available income per household is 23,796 euros (per year) in the Artois-Picardie basin, to be compared with 25,563 euros which is the mean value for France.

4. Comparison of the Water bill and mean available income
With the data of the “Observatoire” of the water agency and the data on income, we have the possibility to calculate for each municipality the following ratio:

<table>
<thead>
<tr>
<th>Mean Water bill (for 120m³ in a year)</th>
<th>Mean available income per household</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aisne</td>
<td>23,499</td>
</tr>
<tr>
<td>Nord</td>
<td>24,314</td>
</tr>
<tr>
<td>Pas de Calais</td>
<td>23,194</td>
</tr>
<tr>
<td>Somme</td>
<td>23,796</td>
</tr>
</tbody>
</table>

The following table gives the results for the sub-regions of the Artois-Picardie basin:

<table>
<thead>
<tr>
<th></th>
<th>Aisne</th>
<th>Nord</th>
<th>Pas de Calais</th>
<th>Somme</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean available income per household (A)</td>
<td>23,499</td>
<td>24,314</td>
<td>23,194</td>
<td>23,796</td>
</tr>
<tr>
<td>Mean Water invoice per household (120m³/year) (B)</td>
<td>455</td>
<td>366</td>
<td>428</td>
<td>382</td>
</tr>
<tr>
<td>B/A</td>
<td>1.94%</td>
<td>1.51%</td>
<td>1.85%</td>
<td>1.61%</td>
</tr>
</tbody>
</table>

Table 1: comparison of the mean water invoice with mean available income per household

The value for the sub-region can be considered as pretty high as the literature (EU commission, Académie de l’eau) states that 2%-3% can be considered as a guidance value (up to 3%, the water invoice is considered as a burden to heavy for the income of the household).

In several municipalities with water services including water distribution and sewerage, the ratio can be up to 3%. And we must pay attention that the ratio is based on the mean income that means that for the poorest part of the population (i.e. the 10% of the population with the lowest revenue), the burden of the water bill is much higher.

4. Final remarks
This survey conducted on the Artois-Picardie river basin gives the following insights:

- in a context of increasing price of water, the weight of the water bill (i.e. bill paid by household for public water services) must be considered as an issue
- a analysis of this weight can be done at a quiet low scale (for example at municipality level)
- this low scale is very important as the analysis of this ratio at higher scale can gives the impression that the situation is quite ok

The issue of the use of this ratio as a potential element of the analysis that could be required for the disproportionate costs justification is an open discussion to develop.

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THE EUROMARKET PROJECT: OBJECTIVES AND PARTNERS

EUROMARKET is a three year research project on "Water liberalisation scenarios: An empirical analysis of the evolution of the European water supply and sanitation sectors". The project is funded by the European Union under the "Energy, Environment and Sustainable Development" programme of the 5th RTD Framework Programme, and by the State Secretariat for Education and Research. For more information, please visit our website.

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