

Griffin, R. C.: *Water Resource Economics. The Analysis of Scarcity, Policies, and Projects*. XV, 402 pp. The MIT Press, Cambridge, MA London 2006. Hardcover £ 32.95.

The water and sewerage sector is a very special one, indeed. In many industrialized countries around the world responsibility to deliver water and

sewerage services is at local level. In Europe both kinds of services are part of the services of general interest. Up to the recent past local public companies were considered to act solely in public interest. Nobody questioned their competence, their efficiency, their ethical code and everybody fostered their attitude to maximize – not optimize – environmental quality.

Very slowly people are realizing that the water and sewerage sector is actually not as different from other sectors. People are becoming aware of the opportunity costs of ever maximizing quality. Engineers, politicians and natural scientists start to feel that some kind of paradigm shift is needed. But how could such a paradigm shift look like? Ronald C. Griffin's book answers this question. It is the right book at the right time. Besides that the author formulates an ambitious goal: Natural scientists, engineers as well as economists should all profit alike. For the first two groups, it will be certainly interesting to contrast economic ideals about water to their own ones. I dare to say it will be the first contact for many.

For an economist the topic seems to be less interesting at first sight. However, there is a lot to learn. First, Griffin explores the peculiarities of water. For example, he mentions the flow character of water. Following the consumption of water, those same units become available again. Yet the renewed availability might not be immediate, might not be in the same place, and might not have the same qualities. That is quite unique and requires special treatment. Second, it is highly fruitful to follow Griffin's didactic approach. For an economist involved in water issues, it is a continuing challenge to communicate with technicians and engineers. Griffin helps to better formulate the economic point of view. However, he repeatedly emphasizes that economical guidance is weaker than we would like it to be.

The text consists of twelve chapters. Each one concludes with a summary and some exercises. After the introduction, the *second chapter* deals with the optimal allocation of water. It starts by investigating the costs of water supply, and then examines the demand for water. These matters are then combined to efficiently allocate water across the various demand groups.

In the *third chapter*, the basic theory is expanded to introduce dynamic modelling. A main focus here is on determining time preference rates, the prerequisite to compare future and present net benefits. Dynamic efficiency is presented as the main criterion for assessing optimality of water use over time. Empirical optimization models are briefly touched.

*Chapter four* is rather an excursus. Here, the author first inspects water law as well as the role of economics for critiquing laws and rules. He points out that current institutions are incongruent and inconsistent. Therefore, he argues in favour of a marriage of surface and ground water institutions as

required for conjunctive water management. He could have gone much further here. Institutions do not perform well because they do not provide incentives for the companies to act efficiently. The wide use of technical norms makes water protection relatively costly.

In the *fifth chapter* Griffin familiarizes non-economists with techniques of policy analysis. He introduces the concept of consumer and producer surplus and demonstrates welfare changes as a result of price-rationing, quantity-rationing, demand-shifting, and supply-shifting. He concludes that for one-period policies the aggregated changes in the net benefit must be positive. For multiperiod policies, the net present value attributable to a policy must be positive.

In the *sixth chapter* Griffin picks up the time preference rate from chapter three and the ideas on how to assess proposed policy changes from chapter five to introduce cost-benefit-analyses. He correctly points out that costs and benefits are often neglected due to incommensurables and intangibles. Thus, an inevitable degree of subjectivity is injected into project decisions. Griffin hesitates to recommend monetarizing all significant benefits and costs.

*Chapter seven* somehow continues the argumentation line of chapter four. The author discusses to move institutions toward transferable water rights. All in all, he recommends this system but emphasizes the fact that additional regulation is needed. Analysing practical experiences he correctly points out that establishing water markets is not a goal of its own but a means to achieve efficiency. Besides the examples the author mentions there are many more which would as well underline Griffin's argument.

The remaining chapters continue the discussion of chapter six. There are two main approaches to deal with water scarcity: Supply enhancement and demand management. Cost-benefit analyses help to assemble the most efficient package of actions.

Griffin discusses water pricing mechanisms in *chapter eight*. Better pricing is for sure the most underutilized tool relative to its potential to better manage water scarcity (and quality). In order to discuss water pricing mechanisms Griffin introduces price elasticity of demand.

This leads to *chapter nine* which presents methods for empirically specifying water demand functions. Griffin discusses the following methods: point expansion, residential imputation, math programming, production function, statistical regression, nonmarket and contingent valuation. Thereafter he displays empirical findings of water demand for the residential, commercial/industrial and agricultural sectors.

The *tenth chapter* then deals with methods to estimate water supply functions. He starts out with approaches to allocate costs. However, the

author only discusses top-down approaches (activity-based costing, segmenting analysis) but unfortunately neglects bottom-up models (analytical cost models).

Both, supply and demand functions, are then combined in *chapter eleven*. The basic model from the second chapter is expanded here. Griffin discusses various options for physical and economic extensions. The *final chapter* summarizes the main findings and highlights the contributions of economics for water policies.

All in all, Griffin achieves his main goal impressively: To write a textbook on water economics that is worth reading for both technicians and engineers as well as economists. The book is also worth reading if the prerequisites are totally reverse than the ones Griffin assumes. Whereas the author focuses exclusively on the scarcity of water quantity, there is, e.g. in Germany nearly no scarcity of water at all; however, the optimal quality of water, the sustainable use of the infrastructure and rising prices due to population movements are important issues. Here, Griffin's book gives important guidance too.

That said, there is one important issue the book does not address: Griffin discusses the various tools to improve the efficient use of water. However, the book falls short of sufficiently illuminating how to increase incentives for companies to operate efficiently. In chapter ten he points out that privatization alone does not necessarily lead to increasing efficiency gains. This is in line with other empirical findings which Armstrong and Sappington summarize as follows: “[P]robably the single most persistent finding in the many empirical studies is that it is competition, not privatization, that leads to greatest efficiency gains within firms.” Griffin does not raise the question how to introduce competition in the network industries water and sewerage service. By discussing elements of an alternative institutional setting the book would have gained a lot.

A new institutional setting mainly comprises of two issues. First, the author could have discussed the various concepts to liberalize or reregulate the sectors both in theory and in practice. It would be worth to discuss the concepts of competition in the market, competition for the market as well as various benchmarking concepts. For each of these methods there are practical examples. England/Wales started to introduce some kind of network access regime (competition in the market) and have established the most advanced benchmarking methodology with their “system of compared efficiency”. The Netherlands and Germany are using rather simple benchmarking systems, whereas France relies on concession contracts (competition for the market). Second, Griffin solely focusses on social rules available for man-

aging water. He correctly highlights that “institutions... cease to be economically justified once they no longer support efficient outcomes”. However, in order to portray ways to introduce competition Griffin’s discussion on the various water laws is not sufficient. Competition law or the pitfalls in the various water laws are at least as important, but are not touched at all.

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