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Rainer Durth*

European Experience in the Solution of Cross-Border Environmental Problems

In view of the ever greater demands placed on the environment worldwide and the limited resources available to meet this demand, cross-border environmental problems are expected to become an increasingly contentious issue in the next few decades. A case in point are international rivers and the problems that arise from the competing claims of the riparian states. In this regard a number of important lessons have been learnt in Europe.

Cross-border environmental problems will become an increasingly contentious issue in the next few decades. Both demographic and economic trends, in the form of population growth and higher per capita consumption, will place ever greater demands on the environment worldwide. Only limited resources are available to meet this increasing demand, however. This is nowhere more obvious than in the case of water consumption, which has increased tenfold over the last hundred years and has now reached 80% of the volume of fresh water that can currently be harnessed on a basis that is economically and ecologically sustainable. The water catchment areas of international rivers cover almost half of the land surface of the earth, and are home to 44% of the world population.¹ Unless the competing claims of the riparian states can be satisfied through co-operation, they will lead to international conflicts in the medium term, as the current tensions in the Middle East demonstrate. Upstream-downstream problems are externality problems, in which the external effect always operates in the same direction: downstream. The classical economic solution to external effects is internalisation: only if all the parties adjacent to the river have to bear the full economic consequences of their actions will optimum utilisation of the river be achieved.

Both demographic and economic development began much earlier in Europe than elsewhere. Furthermore, since the second world war the European Community has developed a particular

method for dealing with environmental problems on rivers crossing international borders. This article will therefore explain a number of important lessons learnt in Europe and illustrate them with concrete examples, drawing on the contrasting experience of co-operation on the Rhine and the Euphrates.

Requirements for International Co-operation

Cross-border externalities can be internalised only if cross-border co-operation is possible. In unintegrated regions of the Third World, in particular, it is extremely difficult to initiate co-operation between headwater states and those downstream. Given the shortcomings or complete lack of international rules under private law and only vaguely formulated and virtually unenforceable international legislation, negotiations on a joint resolution fall primarily within the competence of the national governments of the riparian states.

Effective intergovernmental co-operation depends on a series of factors, however. First, it will come about only if the riparian states are prepared to submit themselves to adequate and credible sanctions in the event of infringements of treaty obligations. A simple way of meeting this requirement is for them to exchange "hostages" or to create mutual dependency. Applying this principle, European integration after the second world war began with the creation of the European Coal and Steel Community in 1952, in

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¹ A. Biswas: Management of International Waters: Problems and Perspective, in: Water Resources Development, Vol. 9, No. 2, 1993, pp. 167-188.

which the member states were to merge their industries of strategic war-time importance. Without such security guarantees, even major efficiency gains may be unattainable, as the example of the states bordering the Euphrates demonstrates.

Secondly, empirical analysis shows that despite large potential efficiency gains there can be no co-operation if upstream and downstream states have radically different ideas about the fair usage or division of cross-border resources.² For this reason, some parties must first concentrate on narrowing the differences between their perceptions of what is just and equitable. An initial and important step in such a process may consist in distinguishing between a "just" outcome and a "just" procedure for resolving conflicts of interest over water usage. It will generally be easier to reconcile differing conceptions of "just" rules. On the Rhine, for example, the institutionalisation of co-operation within the International Commission for the Protection of the Rhine was an important precondition for even raising certain issues disadvantageous to upstream states and discussing them on a multilateral basis.

Thirdly, international negotiations will come about only if all the *governments* involved expect co-operation to bring them more advantages than disadvantages, especially in unintegrated regions where governments have exclusive jurisdiction to speak on behalf of their states. The cost-benefit analysis conducted by governments will be influenced primarily by the following factors. *Improvements in efficiency* that can be achieved by means of joint action are the economic justification for cross-border co-operation. Every act of cross-border co-operation has an impact in one way or another on the *discretionary freedom* of action of the governments concerned, which may have an important effect on whether the government decides to continue or terminate co-operation. In addition, provision must be made for compensation, either in the form of direct (financial) transfers from one state to another or through the simultaneous settlement of several problems between the countries. Finally, the expected effects on a government's prestige at home are also important.

Although compensation is the classical economic solution proposed, in the case studies in question (the Rhine and the Euphrates) it has played only a very

subordinate role, so that its practical importance in the solution of cross-border upstream-downstream problems should not be exaggerated. The same applies to joint efficiency gains, which have never been a dominant issue in the otherwise exemplary intergovernmental co-operation on the Rhine. Rather more important, on the other hand, is the scope for discretionary action. And the prestige effects that governments expect to derive from such action have a decisive influence on their behaviour. Expected positive prestige effects can become one of the most important factors in reaching a solution through co-operation (the Rhine), but the fear of adverse effects on the government's prestige can block negotiations on the resolution of the conflict (the Euphrates).

Parties Involved in the Internalisation Process

International law grants the governments of sovereign states the exclusive right to represent their country in external relations. Cross-border information flows are wholly or at least partially controlled by governments. This monopolistic position impedes efforts by both foreign governments and national citizens to verify information from the national government. This is almost precisely the situation on the Euphrates, where governments control all information on the competing water projects. If the cross-border externalities are to be internalised as completely as possible, however, it is important that other parties also be able to obtain and disseminate information in each other's country, as they can on the Rhine. Measures to guarantee such cross-border information flows are an essential objective and represent an important success of Community environmental law.

Under international law, a government's exclusive right to negotiate on cross-border environmental problems is even stronger than its monopoly over information. Governments can interpose themselves as brokers between the parties concerned and exact a political or economic price from them for doing so. All the parties affected by the internalisation process should therefore be able to obtain and distribute cross-border information in order to be able to monitor their own government and that of the foreign state. Moreover, national governments should not be the only participants in cross-border negotiations. Whereas on the Euphrates no cross-border contacts to deal with upstream-downstream problems are permitted at non-governmental level, this possibility is now taken for granted on the Rhine following a series of civil court actions.

² Rainer Durth: Der Euphrat-Konflikt aus politökonomischer Sicht, in: J. Callies: Treiben Umweltprobleme in Gewaltkonflikte?, Loccumer Protokolle 21/94, 1995, pp. 143-154.

In addition, an international river commission should be formed, first because such a body can reduce the transaction costs of co-operation and secondly because it can help loosen the governmental monopoly over cross-border information flows and negotiations. The example of the activities of the Rhine Commission following the Sandoz disaster in 1986 demonstrates the effective work such commissions can perform.

Finally, European experience illustrates particularly clearly the role that private parties can play in resolving cross-border environmental problems, since governments do not generally cause international upstream-downstream problems nor do they suffer their consequences; for example, the steelworks in the upstream state usually does not belong to the government, and similarly the fishermen in the downstream state are fishing for their own account. These private parties know the economic value of their own usage claims much better than

governments. If internalisation is to be complete, as much of the costs as possible must fall on the economic agents involved, in other words individuals or individual businesses. Although not all cross-border environmental externalities lend themselves to "privatisation" in this way, this undoubtedly constitutes the innovative element in the European approach: in parallel with the establishment of the single market, European citizens can now settle their competing cross-border environmental usage and compensation claims much better among themselves than they could twenty years ago.

Cost-Benefit Analysis

All relevant co-operation and internalisation options should be subject to continual economic cost-benefit analysis, which should also explicitly include the economic evaluation of ecological factors. Such analysis makes it possible to pursue two important objectives simultaneously: first, regular economic

Helen Winter

Interdependenzen zwischen Industriepolitik und Handelspolitik der Europäischen Gemeinschaft

It is worth analyzing the various and often subtle connections between industrial policy and trade policy, because these policies are becoming more important and they are used as substitutes or as complements to one another.

After defining both policies and their relationships, the study examines the industrial and trade policy of the EC as a whole.

The key targets of industrial policy are to prevent or promote structural change and to improve international competitiveness. The various instruments of European industrial policy are designed to deal with international problems, but they also influence the trade relationships between other countries.

In addition to that, the EC uses trade policy instruments as some kind of industrial policy, or to protect industrial policy. This is sometimes cheaper as subsidies. But in some cases industrial policy substitutes trade policy because the application of traditional trade policy instruments is restricted by international agreements.

■ The book is published in German.

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evaluation of the options produces the information required to maximise internalisation, and secondly it generates a willingness on the part of the riparian states to co-operate, as it clearly demonstrates the benefit of doing so.

Apart from the economic assessment of co-operation options, it makes sense to identify the private costs and benefits associated with the various alternative courses of action. If the effects of the measures on individual river users or their interest groups are known, their potential political resistance can be estimated in advance and systematically targeted, and it is also possible to analyse the situation of those users who suffered the consequences of the externality and thus have an interest in its internalisation.

Regrettably, economic cost-benefit analysis of the various internalisation options plays virtually no part in Europe at present; the Rhine Commission even explicitly advises against it, as it would jeopardise the ability to find consensus.³ The political decision-makers on the Rhine are also astonishingly uninterested in the private consequences of their actions.

Private Interests

One of the most important lessons of dealing with cross-border upstream-downstream problems in the integrated region of the European Union is that the economic interests of private parties can play an important part in the internalisation process. The systematic actions taken by the Port of Rotterdam over the last ten years demonstrate this clearly. In the mid-eighties it was discovered that a large part of the silt dredged from the port was highly toxic and had to be placed in storage. The storage dump cost Fl. 200 million to build and it had sufficient capacity for 15 years.⁴ In order to prevent similar costs from recurring after 15 years, the Port of Rotterdam launched a ten-year action programme. First it commissioned a firm of engineers to draw up contaminant balance sheets for the entire Rhine and its main tributaries in the Netherlands, Germany, France and Switzerland. Secondly, it paid a foreign PR firm to publicise the problem of the port's sediment upstream and

campaign for the port's demands for the river to be cleaned up. Thirdly, it obtained extensive legal opinions that formed the basis for direct negotiations with the main polluters of the Rhine and also provided the grounds for damage claims in cross-border civil legal actions. And fourthly, it succeeded in having its demand for clean river sediments adopted by the governments of the riparian states as one of four objectives of co-operation in the Rhine action programme.⁵ On the basis of its own economic interest, the Port of Rotterdam therefore became an advocate of a cleaner Rhine. Under EU legislation it was able to promote its particular economic interests not only in the Netherlands but abroad as well, thanks to a wide-ranging and clearly thought-out long-term strategy. The campaign was directed not only at domestic and foreign politicians, who reacted to changes in public opinion, but also at private-sector polluters. By threatening to lodge claims for damages, the Port was able within ten years to force almost all dischargers of pollutants into the Rhine to make substantial reductions in their emissions.⁶ The activities of the Port of Rotterdam are not an isolated case; Dutch vegetable growers and drinking water works in the Rhine basin have asserted their own economic interests to demand and achieve important cross-border measures to protect the environment.⁷

The position of consumers who suffer as a result of externalities can be strengthened in the internalisation process by adopting the following three strategies:

□ First, private economic interests in cross-border environmental protection have to be created. The usage interests of those private parties who would benefit from internalisation have to be crystallised into ownership rights that are clearly defined, enforceable and if possible tradeable. This can be done either in a supranational framework such as Community law or via national regulations. If the usage rights are predominantly national, it is also essential to ensure that there is a viable interface between different national systems of law. The links between the systems of private law of different countries are generally imperfect and lacking in uniformity; remarkably, this is even true of the European Union, despite its high degree of economic integration. The Port of Rotterdam had the good fortune of being able

³ Internationale Kommission zum Schutz des Rheines: Fünf Staaten – ein Strom – die IKSR, paper presented by Dipl.-Ing. Hogervorst, Koblenz 1991 (available from the Commission).

⁴ Port of Rotterdam: Deponierung von Baggerschlick aus dem Flußmündungsgebiet, Rotterdam (no date).

⁵ Port of Rotterdam: Rhine Research Project: Phase 4 Proposal. Phase 3 Report, Rotterdam 1991.

⁶ Port of Rotterdam: 10 Jahre Projekt Untersuchung Rhein, Rotterdam 1994.

⁷ M. Strübel: Internationale Umweltpolitik: Entwicklungen – Defizite – Aufgaben, Opladen 1992, p. 55; IAWR: Rhein Memorandum 1986, Amsterdam 1986; IAWR: Jahresbericht Rhein 1991, Amsterdam 1994, pp. 29 ff.

to rely on an important precedent, in which Dutch vegetable growers had claimed damages from a French polluter and fought the case through the courts for fourteen years.⁸

□ The fact that externalities in some areas can stubbornly defy the desire for internalisation is often due to disunity among the advocates of such action. If the interests of these groups are to be mobilised in favour of internalisation, steps must be taken to strengthen their ability to organise themselves. This can be done indirectly by influencing the factors that are crucial for co-operation among private parties with an interest in internalisation – for example, group size, symmetry of interests and the sale of club merchandise.⁹ It is no accident that it was the Port of Rotterdam which took the initiative, since it was the only party with a particularly high preference for clean river silt; from the point of view of collective action, the cross-border alliance of waterworks in the Rhine basin is also interesting. Direct assistance can also be given to improve organisation; in some circumstances this may be of a material kind, as in the case of the Dutch vegetable growers, who were helped with their high legal costs.

□ Thirdly, the competitive disadvantages at which the advocates of internalisation find themselves in the political process must be systematically reduced, as these groups generally have transaction cost disadvantages in political markets in addition to their organisational difficulties. The “horizontal” environmental regulations in the European Union are aimed at reducing precisely these competitive disadvantages. They improve the information available to private parties wishing to campaign for environmental protection.¹⁰ In general, the burden of information and proof should be transferred further from the opponents of internalisation onto the advocates.

Prestige Gains and Losses for Governments

The effects on the prestige of governments are relevant to the resolution of international upstream-downstream problems because first they have an important impact on government decisions, secondly they can be generated at relatively little cost and thirdly they can greatly increase the benefits of a joint solution for all the governments concerned. Prestige

effects offer private interest groups an effective means of altering the cost-benefit calculations of domestic and foreign governments in their favour and forcing them to deal with externalities.

The more important and urgent a problem is perceived to be on the domestic political stage, the greater the domestic political benefits the government can derive from co-operation with another government. By adopting an appropriate information policy, the perception of the externality problem can be shaped in such a way that governments have a greater incentive to co-operate. A textbook example of the way in which public opinion can force governments to co-operate comes from the events following the Sandoz disaster. Seven months after Chernobyl and three months before parliamentary elections, the Christian Democrats and Liberals in Germany were under great domestic pressure to present themselves as ecologically sound. The Netherlands Government and the water companies were able to raise public awareness of the importance and urgency of the pollution problem on the Rhine until the German Government endorsed the demands for salmon to return to the Rhine, which had high publicity value.

The more the negotiated solution differs from what is perceived as just at home, the greater the loss of prestige for a government. On the other hand, governments can look forward to positive prestige effects if the joint solution accords with expectations in domestic public opinion. Governments can therefore hope to reap prestige gains primarily if domestic public opinion in all the riparian states has similar ideas of what constitutes a fair settlement. All parties with an interest in seeing governments co-operate on internalising costs should therefore direct their efforts to achieving consensus on a just solution in all countries. As with efforts to influence problem and risk perception, this is a path that is not available exclusively to governments. For the governments of the states along the Rhine, it was decisive that the Sandoz disaster led to a change in public awareness: whereas previously the Rhine had been viewed as a classic upstream-downstream problem, the disaster brought a change in perception, so that now the “Rhine eco-system” was a public good in which all the riparian states had an equal share.¹¹

⁸ J. von Dunné: Die Anwendung des internationalen und nationalen Rechtes bei den Prozessen um die Einleitung der französischen Kaligruben, in: IAWR: 11. Arbeitstagung, Amsterdam 1988, pp. 129-136.

⁹ See M. Olson: Die Logik kollektiven Handelns, Tübingen 1991.

¹⁰ For example, the environmental information Directive (90/313/EEC) and the Directive on environmental acceptability testing (85/337/EEC).

¹¹ The reporting at the time in the Neue Zürcher Zeitung and the Frankfurter Allgemeine Zeitung hinted at this change in perception.

European experience shows that governments pay heed primarily to the way in which they can present co-operation to their domestic constituents. In their cost-benefit calculations, solutions or symbols that catch the imagination can be a substitute for other benefits, such as transfer payments, further efficiency gains and an increase in the scope for discretionary action. In other words, governments can be persuaded to co-operate if particularly apt symbols are chosen. An interest group which manages to attach a politically valid symbol to its demands can reap benefits in the negotiations by proposing a solution and acting as an agenda-setter. Such symbols need not necessarily be devised and launched by governments; it is also conceivable that a private interest group will use this method to coax reluctant governments into agreeing to internalisation. The original Dutch demand that "salmon should again swim in the Rhine", which was also made after the Sandoz disaster, is a strikingly clear image. The salmon then became a joint positive symbol that governments in the upstream states were able to "sell" to their domestic constituents.¹²

Nature of the Process

Governments and other interested parties are not suddenly prepared to internalise externalities completely; they can come close to achieving this objective only through increasingly intensive co-operation. The complete internalisation of an upstream-downstream problem is possible only if co-operation among all the parties involved is viewed as a long-term process, the terms of which are designed to achieve a specified aim.

External shocks contrast with this somewhat pedestrian rate of progression, as they can cause a radical and unforeseen change in the cost-benefit calculations of individual participants; they can help overcome political and economic inertia standing in the way of internalisation. They may take the form of sudden changes in the domestic or external political climate, technological innovation, an economic change or even a disaster, such as the fire at the plant of the Swiss chemical giant Sandoz which has been alluded to several times already. External shocks may affect the participants' cost-benefit calculations

permanently or only temporarily. If the effect is only temporary, it presents the other parties involved with a unique window of opportunity which must be exploited quickly and determinedly before it closes again. Anyone wishing to influence the resolution of upstream-downstream problems should therefore watch closely for sudden changes in the cost-benefit calculations of other parties and be ready to exploit them.

Once the various interested parties in the riparian states have decided to co-operate, there is a good chance that co-operation will acquire a momentum of its own as it intensifies. The ultimate driving force behind such self-sustaining momentum is the economic benefit of internalising cross-border externalities. The internalisation process and its boundary conditions should be so arranged that the variable costs of a further internalisation step are as low as possible for all parties involved and steady improvements in efficiency are possible. Ideally, the start of international co-operation on the internalisation of cross-border externalities should have a domino effect which continues right down the line.

Institutional Learning

Upstream-downstream problems in integrated regions differ from those in unintegrated regions not in the actual nature of the problems themselves but mainly in the restrictions to which the interested parties are subject. These are contained in the formal or informal rules codifying society's experience with the solution of a problem. Progress takes place as the existing rules are adapted to take account of fresh experiences.

In Western Europe the economic and demographic changes of modern times began much earlier than in most other regions of the world. As a result, experience has been accumulated over a longer period and principles of co-operation have been developed. From the standpoint of unintegrated regions, the EU can therefore be interpreted as a vast storehouse of experience. The work of the Elbe Protection Commission provides impressive proof that the co-operation process among a river's riparian states does not have to begin from square one every time. Although the German and Czech authorities had practically no experience of co-operation on the Elbe, they were able to assimilate and apply the wealth of experience of the Rhine Commission relatively easily; within four years, rather than forty, the Elbe states had caught up with their counterparts on the Rhine.¹³

¹² See Internationale Kommission zum Schutz des Rheines: Ökologisches Gesamtkonzept für den Rhein: Lachs 2000, Koblenz 1991.

¹³ P.-M. Schulz: Die Gründung der internationalen Kommission zum Schutz der Elbe, in: *Natur + Recht*, No. 10, 1993, pp. 481-485.