

Chapter 12

Methods for Social Participation and Conflict Resolution

Ignacio Celaya, Antonio Rodríguez Perea and Xavi Carbonell

Abstract Droughts can result in restrictions to water supplies, which cause alarm in towns and cities or wherever they are enforced; a situation the news media never fails to cover with photos of deserts and death disseminated far and wide. It is clear that droughts place hydraulic systems under an extreme amount of strain – especially rivers and aquifers. It is therefore essential to make use of successful experiences to create a new conception of the field. It will however take some time for this to be accepted as the norm, since drought management will continue to generate situations involving conflict between the interests and values of different individuals and groups.

Prevention, negotiation, mediation, arbitration, judicialization and imposition are the successive steps towards solution of the conflict. First steps are preferable than the last ones because normally they lead to more sustainable success.

The Context and Objectives

Droughts can result in restrictions to water supplies, which cause alarm in towns and cities or wherever they are enforced; a situation the news media never fails to cover with photos of deserts and death disseminated far and wide.

It is clear droughts place hydraulic systems under an extreme amount of strain – especially rivers and aquifers. It is therefore essential to make use of successful experiences to create a new conception of the field. It will however take some time for this to be accepted as the norm, since drought management will continue to generate situations involving conflict between the interests and values of different individuals and groups.

I. Celaya (✉)
Fundación Ecología y Desarrollo, Plaza San Bruno, 9, 50001
Zaragoza, Spain
e-mail: ecodes@ecodes.org

Water disputes occur whenever the demand for water cannot be met by the hydrological resources in a particular region or sector. Typically the disputes are related to years of frustration, waiting, conflict, pain and emotion. Solutions therefore require the application of tools and techniques used in the alternative management of conflicts. Climatic change and drought management have made it necessary for us to be imaginative, generous and responsible when taking action.

The goal of any type of alternative conflict management must take into account not only solutions to the water use and management problems, but also the particular characteristics of the conflict so the foundations can be laid to avoid a recurrence of the conflict. Water disputes are a specific type of environmental conflict; they have specific characteristics and affect collectives; they are complex and normally difficult to quantify in economic terms; they take place in the public domain and their resolution has a significant effect on future generations. Disputes can also worsen or be resolved in accordance with temporary changes in the weather, with droughts accentuating and rains reducing the conflict. And all too often during negotiations environmental interests are underrepresented, which results in agreements that have a detrimental affect on non-renewable resources.

One of the bases for the resolution of water disputes is prevention, which feeds off the principles of demand management and the application of which is becoming less and less problematic, especially during droughts. When conflicts do occur, negotiation represents the next stage in the search for a solution. Success often depends on the correct representation of the parties involved. When negotiations fail, the next option for the resolution of the dispute is mediation. Success at this stage still holds the virtue of the potential control over the agreement of the parties involved. If mediation does not work, there is arbitration. This should be the main role of the Water Authorities when agreement is not reached between the parties or when the agreement results in an inadmissible environmental cost. To this end, the Water Authorities should aim to acquire or increase their prestige so as to be recognized by everyone involved. The second from last possibility for the resolution of the water disputes is judicialization. This stage should only be reached when all the previous possibilities for reaching a solution have been exhausted. And the last possibility is imposition. In this case one of the parties imposes their will on another. This is normally a false solution, which is only valid temporarily. History is however replete with experiences of this type.

Strategies for the resolution of water disputes can be classified in three groups: *prevention strategies*, actions aimed at pre-empting the crystallization of the conflict. *Balancing strategies*, when protest or community groups counteract unbalanced perceptions. Lastly, there are *mediation strategies* that are undertaken by individuals either in institutions or otherwise, which bring the parties involved together and create conditions favourable to an agreement.

In short, and as a comparative analysis between a range of experiences, we can conclude that truly participatory water planning is the best tool for the prevention of disputes. The symbolic value of water is underestimated in the majority of cases. Multidisciplinary analyses are not generally undertaken prior to the conflict and the representation of the parties involved should be improved. The role of the water

authorities is fundamental in the avoidance of agreements that contravene the law, scientific principles, or transfer damages to third parties, especially when they are to the detriment of the water resources of the future.

The aim of this chapter is to make use of specific Spanish experiences arising from a situation of conflict (either manifest or dormant) in the context of water management to schematically:

- Describe the features that define this type of conflict.
- Analyse in depth the contributions made by the range of disciplines involved and their complementarity.
- Present the range of approaches to conflict resolution.
- Show the potential of certain tools and techniques for social intervention in water disputes.
- Place the processes observed in the range of experiences in an easily understandable conceptual framework.

Water Disputes

Disputes can be defined in many ways, but all include the lowest common denominator, which is a situation of conflict, but at the same time an opportunity. Conflict in that there is a confrontation of interests, perceptions, and/or attitudes between two or more parties. This confrontation should not be interpreted negatively, since there are positive aspects to conflicts, which allow the development of beneficial outcomes for all the parties involved. Disputes can therefore be viewed as opportunities to create conditions for finding solutions that satisfy all parties (“I win you win” Cornelius and Faire (1995)), with the potential to promote changes in social conditions and introduce new ways of thinking. Consequently innovation and creativity are inherent to the management of conflicts.

The two extremes of confrontation and opportunity and the grey areas in between are in our opinion conditioned by two groups of factors: cultural conditioners and public awareness conditioners. A hetero-cultural perspective facilitates the management of conflicts involving collaboration in the handling of natural resources.

Water is a privileged natural resource for analysing conflicts connected to consumer and non-consumer demands; its use as a means of transport, for the maintenance of certain habitats, or as a recreational or symbolic area (well documented in publications such as González Alcantud and Malpica, 1995).

As is the case in other environmental conflicts, when we talk of water disputes, we mean a particular type of social conflict in which the problems encountered are related to the quality of life of the people involved (in its widest sense) and the environmental conditions. The following characteristics differentiate these disputes from other types of environmental conflict:

- They involve collective actions. They involve or confront groups of people, who are not all organized to the same degree.

- They are complex processes: Entailing the unstated interests of the range of parties, whose public and private positions may differ. On a local level, there is an extensive and continuous need for harmonious coexistence between the parties. There are economic, social, cultural and scientific ramifications. Finally, a great deal of information is required.
- The process is carried out in the public domain.
- Conflicts are on many occasions the result of different values, perceptions and meanings, which cannot be quantified.
- The participants are publicly recognized, whether or not they are considered legitimate.
- There are participants who are not present, and whose importance should be stressed, who are the future generations.
- There is normally a high degree of uncertainty, because it is complicated to predict the environmental impact of proposed actions, or because the information required to estimate these impacts is not available.

In the end water disputes are slightly more complex because of the institutional dimension, but on the whole similar to other conflicts involving natural resource management, in which conflicts exist due to the scarcity of the resource, or because of conflicts between values, power, information, interests, or, most commonly, an interrelation of them all.

Water disputes do however have certain specific features. They almost always occur during droughts and their resolution is often connected to the end of the period of scarcity. And since during periods of abundance there is no public demand to take decisions, actions required for the long-term solution of problems are put off until the next drought. Problems therefore become entrenched and exacerbated, the only hope being a technological miracle that never materialises.

This corollary should be highlighted. The most unpopular actions required to resolve water disputes are taken during periods of hydrological stress, normally as emergencies, with very high economic, social and environmental costs. And between droughts the conflict is forgotten, water is abundant and its price often too low. The needs that caused the problem are met, and nobody takes it upon themselves to return the water to the ecosystems from which it was taken in order to resolve the conflict.

Another defining characteristic of water disputes are the unequal levels of representation between the ranges of interests involved. Water users, and in particular farmers and supply companies are usually over-represented, either directly or through professionals who depend on them, whereas the representation of environmental interests is often purely symbolic. The water company typically takes on the role of the arbitrator, which is naturally inclined to tend to the more powerful interests. Water resources are therefore overexploited during hydrological crises, because those groups interested in defending them are nearly always in a position of inferiority.

In short, the alternation between periods of drought and periods of abundance marks the rhythm of the generation and resolution of water disputes, which therefore

differ from other types of natural resource management conflicts. This characteristic could be of assistance in the resolution of the problem, but often leads to temporary solutions, which are erroneous and typically only work by reducing the resources available to future generations.

Conflict Analysis

Water disputes embrace a very wide range of disciplines: Ecology, social studies, politics, economics, etc. It is therefore very important to identify the approach or discipline used to present the analysis, because the perspective chosen will condition any subsequent actions.

The field of the management and analysis of environmental conflicts is constantly advancing as a multi-disciplinary field. We feel it is important to highlight the contributions of the following disciplinary approaches:

- Sociology (the work of Pont (2004) on the protest movement against the National Hydrological Plan).
- Environmental psychology (the work of Corraliza (2000) and Castro (2000))
- Anthropology (studies on water disputes in the Pyrenees by Mairal and Bergua (1997))
- Political science and its contribution to the concept of environmental governance (the team of the IGOP of the UAB, of the Universidad Pablo Olavide and Seville (Moral and Paneque, 2004))
- Socio-ecology (Folch, 1999)
- Political ecology (the reflections of the school of Martínez Alier, 2005)

A comparison is also made of the tools used by each of them: discourse analysis, open interviews, questionnaires, active listening, analysis of organizations and policies, multi-factor techniques, etc.

The preliminary conclusions can basically be grouped as follows:

- Many approaches suffer from an excessively biased view of the conflict. To this end we have adopted the reflections of Villasante (Villasante and Carballo, 2007) when he describes the example of the situation of violence in a Columbian neighbourhood, and the range of responses obtained according to how, who and where questions are asked (Montañés et al., 2001).
- The different approaches often underestimate the role of the parties involved in the definition of the analysis of the conflict.
- Efforts have been made to quantify factors, which do not connect with determinant qualitative aspects, such as power relationships.
- Neither have tools been developed sufficiently for the simulation of scenarios, which could be of great interest for the creation of consensus.

Different Approaches to Conflict Resolution: The Pyramid of Conflicts

There is a range of ways of tackling the resolution of conflicts. A brief description is given below of each. If they were ordered in a pyramid, the options at the base would involve a greater degree of consensus, and the further up the pyramid the higher the level of conflict.

The ideal strategy would be to AVOID the conflicts in the first place. This would however necessitate a cultural change requiring time and money spent on prevention, which in the case of environmental conflicts would mean a strong emphasis on hydrological participation and planning, not as a strategy, but rather a profound conviction that recognises the multiple demands on the resource, and that the interests of all the parties are equally legitimate, that the problems are complex and that the management of the shared knowledge teaches us responsibility and enables us to accept the decisions taken. This is the approach of the New Culture of Water; water disputes can be forecast, discussed and resolved before the event because the hostility of the conflict is greatly reduced in periods of abundance, and increases progressively during droughts. An efficient Water Administration Company can and should forecast conflicts and take advantage of the enhanced capacity for resolving these when they are dormant, in order to improve their prevention.

MEDIATION would be third from the bottom of the pyramid. It is not a universal remedy for resolving water disputes, but a powerful tool that should neither be sold short nor overvalued. Solutions reached in a consensus enable all parties to feel empowered by the decisions taken. From this point on if the agreement respects the interests of all parties, the problem resides in encountering the appropriate means to satisfy these as far as is possible. A sensible combination of technical and political decision making, and respect for what realities leave etched on the collective imagination, may be the key to making a reality of the perceived paradox which is the possibility of all the parties being winners in the resolution of the conflict.

A good agreement must enable each party to return to their field, or economic or social sector with their head held high because they are convinced the agreement reached is stronger and represents more progress than any option recognising winners and losers.

Another common method for resolving conflict is ARBITRATION. All parties must approve its choice, but the decision taken by the arbitrator is always independent of their wishes. The Water Administration Company should once again be capable, through their actions, of earning the prestige required to be worthy of taking on the role of arbitrator, which they are awarded on many occasions in the legislation. This is a difficult task, and more so when all too often the role is executed with partiality and in response to the corporate interests of the technicians involved.

In recent times JUDICIALISATION has also often been used as a method to tackle water disputes; only possible in democracies. The parties understand the procedure, and have certain legal rights, but have no effective control over their execution, the individuals involved, or the result. Everyone knows how to initiate

a court case, but no one knows what the result will be. In the case of water disputes, as in others, the lack of specific training in water issues of lawyers and judges combined with the complexity of the problem mean there is a tendency to reach decisions in economic terms that grossly underestimate the true values of the issues under consideration.

Lastly, it is sometimes the case that due to the disparity between the strength of the parties involved, one makes an IMPOSITION upon the other and ignores any type of reasoning. Imposition may also occur when it is impossible to reach an agreement or when an agreement is patently unethical and the Water Administration Company imposes a necessary solution. In the first case, the imposition has mortgaged its future to later increases in strength of the losing party; and in the second case, success depends solely on the virtue of the imposed solution.

We have wide-ranging experiences in this history of the management and exploitation of water in our country, which has always been interpreted in terms of a confrontation between individuals, interests and territories. The conflicts are inherently good because they show us the diversity and the range of points of view concerning the same problems. However, our ability to resolve them is a measure of the health of our democracy in a society such as ours, which cannot face up to the challenges of the twenty first century without properly addressing this topic.

Intervention Tools for Management Disputes

Certain people have sustained that intervention in the management of conflict is a mix of art and science, and they are not without reason in our experience. Science in terms of systematic analysis, definition of the conflict and design of the intervention process, and art in terms of flair, personal skills and know-how during its execution.

We are therefore specially interested in processes with a collaborative, informal and voluntary emphasis, which are complementary to formal mechanisms for the resolution of conflict (i.e. strict adherence to the rule of law).

Consequently good conflict management would be where the parties involved (directly or those affected by the conflict) all have a real opportunity to understand their mutual needs and to develop a range of alternatives that meet their expectations and enable them to reach a mutually satisfying solution (Lewis, 1988, Lewis, 1996). To this end, we have analysed the application of tools used to avoid confrontation and hostility in the selected cases, by means of a third party who assists the collectives in conflict in reaching a mutually satisfying solution and facilitates the end of the negotiation process.

Our experience in water disputes to date enables us to group intervention methods in three general types. The first one is based on conflict prevention strategies. In this case there is a range of intervention methods aimed at being a step ahead of the emergency arising from the conflict and basically include environmental and dynamic education actions related to forecasts of the future. The following projects could be included in this group: “Voluntary Workers”, “Saragossa, a City Saving Water”, and the Malaga and Balearic Island Water Forums.

A second group of strategies appear confrontational and incommunicative, but in reality seek to readjust the balance of power by means of protest organizations to broaden the participation of the general public. The following experiences could be included in this group: the Anti-dam organisations (COAGRET) and the Platform for the Defence of the River Ebro. These normally become direct negotiation processes.

Finally, there are strategies in which the intervention of a third party or a team of collaborators creates the circumstances required for mediation by moving the range of parties towards a future relation of constructive, cooperative and potentially more productive work than if the conflict were left to develop by itself. The following experiences could be included in this group: “The Social Initiative for Mediation” and “The Water War in the Metropolitan Area of Barcelona” in its last phase. It is possibly useful to make a distinction in the case of mediation between the role of an institutional mediator linked to one of the parties, and as a result closer to a political mediation, and the role of a team or individual external to the parties involved in the conflict.

We should also analyse the tools used in each case (communication tools, leadership, interests vs. positions, empathy, active listening, anger control, reformulation, reframing, etc.) and attempt to understand how the processes evolve. We should also be able to compare the tools used to support each of them: discussion analysis, open interviews, questionnaires, active listening, analysis of organizations and policies, multi-factor techniques, etc.

Conclusions

Conclusions have been reached by means of a comparative analysis of a range of experiences:

1. Participatory water planning is the best tool for the prevention of conflict. When discussing conflict resolution, we should not lose sight of the fact that prevention is always better than a cure. There is no better solution than the non-existence of the problem. The quality of water planning can in fact be evaluated in terms of the number of conflicts that are avoided, the success of which would depend on the participation of interested parties. One example of many we could give was the composition of the National Water Council during the processing of the previous National Hydrological Plan. The history of the Ebro water basin has demonstrated the fact that many of the water conflicts arising in the last few decades could have been avoided by means of suitable water planning, better information for those involved, and efficient consultancy processes, in which the general public participates as well as the major users and irrigators. Many authors cite one of the advantages of participation as being the possibility of preventing future conflict (Font, 2001, Martí et al., 2001, Montañés et al., 2001, Pindado, 2000). Nevertheless, this benefit has not been studied in depth and the importance of the opportunities available from this type of community action, where a wide-ranging, complete, integrated and specific

participation process is carried out, has not been assimilated. Here we refer to active public participation.

The implementation of the EU Water Framework Directive (2000) has greatly changed European Union policies for water resource management. One of its most important provisions is the requirement of public participation, which will contribute to the protection of the environment and an adequate management of natural resources. The Water Framework Directive describes participation not only in terms of a one-way communication process, where simply more information is made available, but refers to a two-way communication process in which information and opinions are exchanged in an inquiry process. The member countries have committed to fostering a type of active participation, which can never be considered either too early or excessive. The specific methodology used to carry out a participation process must be adapted to its context, and to the interests and expectations of those involved. Exact formulas do not exist, because those involved are the ones responsible for the construction of the participation process, with the assistance of a facilitator who coordinates its design and execution in accordance with the will of the interested parties.

2. *Interventions often lack a prior multi-discipline analysis of the conflict.* Interventions, which require a high degree of personal dedication and involvement from everybody, can be a failure because records are not provided by other disciplines that could open new areas for negotiation between those involved.

3. *The interests of all those involved must be respected equally.* Those involved may be right or wrong from a logical or scientific point of view, their views may be supported by more or less individuals, but the interests, objectives and wishes of everybody involved must be respected.

If those involved feel the mediator does not value or respect their beliefs, confidence will soon be lost in the process and it will collapse before it even gets going. A real participation process, as described in the Water Framework Directive, ensures everybody is listened to and their ideas recognized, which increases the chances of a successful outcome agreed between everyone.

4. *Conflicts are complex, and so are their solutions.* It would be naive to think conflicts that have developed over a long period of time and become increasingly complex can be resolved easily. The time required to unravel a knot is proportional to how tangled it has become. Complex problems require complex solutions.

5. *Agreements cannot be reached that contravene the law, science or which transfer damages to third parties.* Those involved reach agreements as is the aim of the mediation process. Agreements however have limits. Damages must not be transferred to third parties, and neither should they be passed on to the present or future water resources. In the case of major hydraulic works, the public administration is more than just the witness to an agreement between others. It plays the lead role in the agreement. In fact it is legally competent to promote the decisions taken and must ensure agreements do not contravene existing legislation.

6. *The critical factor: the willingness of those involved to reach an agreement.* No type of methodology can replace the most critical factor: the willingness of those involved to reach an agreement. An incentive to this willingness comes in the form

of the conviction that a safe agreement is preferable for all. In other words it is better to be sure of 100% of an end document which meets 85% of your expectations than to reach a doubtful and weak agreement that meets 100% of your intentions.

7. *Consensus agreements are more practical.* When agreements are made through the consensus of all involved, no one places legal obstacles or obstacles of any type in the way of the implementation of the agreement. The agreement will therefore be executed earlier, and public administrations will be keen to invest in them, happy in the knowledge that there is no opposition. Reaching a consensus is often laborious and time is lost during the decision making. A lot of time is gained however during the execution. The end result of an agreed plan, is that the work is normally completed much earlier than one imposed upon one of the parties involved.

8. *Specific methodology is required for each conflict.* There is no such thing as a universal methodology that can be applied to any context and situation. Generally valid mediation principles need to be adapted to specific situations. The people involved, the history of the case, the socio-political situation, and the existing legal frameworks are all unique to each specific conflict. And unique components need to be tackled specifically in each case. A little craftsmanship is required, where generosity, responsibility and honesty are needed to make the best use of the materials at hand.

9. *The role of the general public.* Dialogue and mediation as the main strategies for the resolution of conflicts in water management and use can perfect the democratic process if and when the general public makes the necessary commitment. Much is still to be learned concerning the reciprocal relationships between public administrations and the general public in order to increase our understanding of participation, tolerance and consensus creation.

Finally, mediation is not a universal remedy for the resolution of water conflicts in Spain, and neither is it the best solution. Ideally conflicts would be avoided in the first place, as explained as the first step of the pyramid for the resolution of conflicts described above in the spirit of the New Water Culture. And in the event of conflict, those involved would ideally be able to reach a mutually satisfactory solution by means of a direct negotiation process without the need for external assistance. We are however convinced that given the current culture of Spanish society, and specifically the main players in water conflicts during the droughts that are now again upon us, participation, its principles and methodology can contribute a great deal towards the construction of a water culture that listens to the sensibilities of Spanish society at large concerning the management of the resource, and which also meets the demands of the new Water Directive of the European Union.

References

- Balearic Island Water Forums / El Foro del Agua de las Islas Baleares. http://www.ecodes.org/pages/areas/mediacion_participacion/documents/Dcl_Bal_03.pdf
- Castro R de. (2000) Educación Ambiental. In Aragonés J A, Amérigo M (eds.), *Psicología Ambiental*, ISBN 84-368-1515-7, pp. 357–380

- COAGRET Coordinadora de Afectados por Grandes Embalses y Trasvases www.coagret.com
- Corraliza J A (2000) Emoción y Ambiente. In Aragonés J A, Américo M (eds.), *Psicología Ambiental*. ISBN 84-368-1515-7, pp. 59–76.
- Cornelius H, Faire S (1995) *Tú ganas, yo gano. Como resolver los conflictos creativamente y disfrutar con las soluciones*. Ed. Gaia.
- EU Water Framework Directive (2000) Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy. OJ C 327 22.12.2000
- Folch R (1999) *Diccionario de Socioecología*. Editorial Planeta. Barcelona.
- Font J (coord) (2001) *Ciudadanos y decisiones públicas*. Barcelona: Ariel.
- González Alcantud J A, Malpica A (eds.) (1995) *El agua: mitos, ritos y realidades*. Diputación Provincial de Granada. *Antropología*, 30.
- IGOP, Institut de Govern i Polítiques Públiques, <http://igop.uab.es/>
- Lewis D (1988) Desire as Belief I. *Mind*, 97(387):323–332.
- Lewis D (1996) Desire as Belief II. *Mind*, 105(418):303–313.
- Mairal G, Bergua J A (1997) El conflicto territorial. In Mairal G, Puyal E, Bergua J A (eds.), *Agua, tierra, riesgo y supervivencia: un estudio antropológico sobre el impacto socio-cultural derivado de la regulación del río Ésera*. ISBN 84-7733-489-7, pp. 241–258.
- Malaga Water Forum / Foro del Agua de Malaga Declaración del Foro de Malaga 01.02.2003 <http://www.unizar.es/fnca/includes/noticias/print1.html>
- Martí J, Montañés M, Rodríguez-Villasante T (coord.) (2001) *La investigación social participativa. Construyendo ciudadanía*. Barcelona: El Viejo Topo.
- Martínez J (2005) *El ecologismo de los pobres: conflictos ambientales y lenguajes de valoración*. ISBN 84-7426-743-9. Icaria Ed.
- Montañés M, Rodríguez-Villasante T, Martín-Gutiérrez P (coord.) (2001) *Prácticas locales de creatividad social*. Barcelona: El Viejo Topo.
- Moral L, del, Paneque, P. (2004) Tres décadas de debates sobre el agua: de la Conferencia del Mar del Plata a la Nueva Cultura del Agua. In Suárez J M (ed.), *Las miradas del agua*. Sevilla: EMASESA.
- National Water Council/Consejo Nacional del Agua <http://hispagua.cedex.es/instituciones.php?c=detalle&pg=0&localizacion=Administracion%20General&id=10024>
- New Culture of Water/Fundación Nueva Cultura del Agua <http://www.unizar.es/fnca/index3.php?pag=11&id=3>
- Pindado F (2000) *La participación ciudadana en la vida de las ciudades*. Barcelona: Ediciones del Serbal.
- Platform for the Defence of the River Ebro/Plataforma en defensa de l'Ebre <http://www.ebre.net/>
- Pont J (2004) *La ciudadanía se moviliza. Los movimientos sociales y la globalización en España*. Barcelona: Flor del Viento Ediciones.
- Saragossa, a City Saving Water/Zaragoza, ciudad ahorradora de agua. <http://www.ecodes.org/>, <http://cmisapp.zaragoza.es/ciudad/medioambiente/centrodocumentacion/objetivos.htm>.
- The Social Initiative for Mediation / Iniciativa Social de Mediación (ISM) <http://www.ecodes.org/pages/especial/ISM/index.asp>
- The Water War in the Metropolitan Area of Barcelona/Morera E, Perxacs H, (2000) El conflicto del rebu de l'aigua: el cas de Barcelona, *Revista Bibliográfica de Geografía y Ciencias Sociales*, 253, Universidad de Barcelona
- Villasante C S, Carballo A (2007) *La huella ecológica de una economía cerrada: consideraciones teóricas sobre el ajuste de comercio en el marco de análisis de la huella*. (<http://www.eumed.net/eve/resum/07-junio/cpvl.htm>)