Planetary Garden 99 14 au 18 mars 1999
5.1 : Theory of sustainable development : system theory

From rationality to governance : decision process of sustainable development

Christian Brodhag
Directeur de Recherche à l'Ecole des Mines de Saint-Etienne
ancien Président de la Commission Française du Développement Durable

On account of the ambition which leads sustainable development and the radicalism of its objectives, it will not be imposed but has to be desirable. This is the condition for its implementation in the context of democracy. There is now a consensus on the fact that a sustainable development strategy must find triple bottom line objectives of a development that is economically efficient, socially equitable and responsible and environmentally sound. This has been told the 3 E strategy[1]. In addition this development has to overcome three kinds of contradictions :

- the temporal dimension to conciliate long term concern and short term actions, the future and present generation of the definition of the Brundtland Report
- the spatial dimension from global and regional to local issues,
- and complexity dimension, i.e. complex issues has to be solved within a simple decision framework for the stakeholders.

Merely the question is that most issues and triggering mechanisms are global, long term and complex, and solutions should be concrete, simple short term and local.

To aim at several targets simultaneously is in conflict with our mental structures shaped by direct causality thinking and sector-based approaches. Present administrative structures and decision mechanisms are consequences of this vision. Environment and economy are conceived as drastically opposed. Environmental performance is always balanced with additional cost, and not in win win synergy. Integration and prevention are key words which had to be developed in holistic and systemic approaches.

Needs of rational decisions are referred to in Action 21, which proposes for example " *to ensure a rational and holistic approach to the sustainable and environmentally sound development of forests* "[2]. This concept of rationality has been explained to be a key concept of sustainable development[3]. In fact the word " *rational* " is far more often used in the French translation, with 225 occurrences than in the original English version where the word rational is only found 25 times[4]. The word " *sound* " (in the context of environmentally sound or ecologically sound) is 150 times erroneously translated by " *rationnel* ". This shift in concept can explain some disagreements between French and English understanding of sustainable development. Despite that, the question remains : on which type of rationality[5] should we establish sustainable development ?

---

1 European Partners for the Environment, http://wwww.epe.be

2 Action 21 Rio § 11,1

3 Dumbe-Bille, S. and Al., (1995) Les aspects juridiques de l'Agenda 21 : la mise en œuvre juridique de la conférence de Rio. Collectif. Université de Limoges

4 this statistic work has been carried out by Phillippe Jaillon, RIM SIMADE from Ecole des Mines de Saint-Etienne, more results can be found in : Christian Brodhag, *Le développement durable un enjeu majeur pour les systèmes d'information*, Colloque européen : Informatique pour l'Environnement '1997, Strasbourg, 12 septembre 1997

5 Faucheux S., Froger G. et Noël J.F., (1993) Quelle hypothèse de rationalité pour le développement soutenable, Economie Appliquée, tome XLVI, , n°4, p59-103

To the vision of an unique " substantive " rationality which should be imperative everywhere and at anytime, we should oppose a limited form and relative form of rationality. According to the work of Van Gigch[6] we propose the use of four kinds of rationality [7]:

- the Structural Rationality (SR) which guides the establishment of the structure of the organizational decision making. Who decides ? Which issues should be aimed at ? What are decisions, about what, when, at which level ?
- the Evaluative Rationality (ER) refers to either the goals toward which decision makers appear to strive and/or the criteria by which goal attainment is defined and evaluated. It is the use of sustainable development indicators.
- the Procedural Rationality (pR) refers to the issue of the choice of decision making procedures
- the Substantive Rationality (sR) is constituted by substance of knowledge, universe of discourse, as legal rules or technical knowledge. This is the role of founding principles of sustainable development, for example the principles of the Rio declaration..

This approach is disrupting, the question is not to decide with full knowledge of causes but with full knowledge of consequences. As Agarwall proposes " the real problem is not to make mistakes, what is grave is not to take advantage of mistakes through evaluation of their causes "[8].

With quality approach (ISO 9000), and today with environmental management (ISO 14001), we observe in private companies implementation of continuous improvement mechanism based on evaluation. We can transfer this type of approach to public decision. The evaluation mechanism should be based on sustainable development indicators. In this context those indicators have not only normative aims to compare national performances, but, through bottom up vision, sustainable development indicators could support formalization of collective objectives. They can lead to contracts between all stakeholders of an issue (territorial through local Agenda 21 or thematic), or belonging to different level (international, national and local). They can allow comparison between the assessed trends and prevision hypothesis on one hand, and actual evolution, on the other hand, in order to reevaluate policies. Such formalization of objectives can be used for continuous improvement of societies in the direction of sustainable development. In this approach indicators are embedded in decision mechanisms.

1. New governance mechanisms

Governments at different levels should work with multi-stakeholder structures including the groups within society, as a way of integration economy, environment and social justice[9]. Sustainable development is government's core concern, but must not be only government's concern. Citizens should not believe that they can simply wait for change and blame government if it does not come. Only the interaction and engagement of all of the sectors in society are able to create change. Government, industry, NGOs, labor and communities all are concerned because it is the way a society lives, the way that it produces and consumes that determines whether it is sustainable or not. The outcome of a society's efforts to achieve

---

6 Van Gigch, J. P., (1991) System design modeling and metamodelling, Plenum Press

7 Christian Brodhag, Patrick Burlat, Sustainable development : rationality and information system, Conference of European Society for Ecological Economics, Geneva, 4-7 march 1998

8 Colloque Maîtrise Long terme & Démocratie, GERMES, 11 septembre 1996, Abbaye de Fontevraud, to be published

9 National Councils for Sustainable Development, Making Sustainability Work, A Vision and Practical Measures for National Councils as Effective Mechanisms for Sustainable Development, Rio de Janeiro, Rio+5, Earth Council Meeting, 19 March 1997

sustainability depends on the choices that individuals and institutions make, and progress depends upon broad social agreement about the goals and process of change.
Those approaches should be based on consensus building. In a group the need for consensus makes the views of each member equally important, and requires members to work to understand and persuade one another. Consensus building is based on a fair and transparent exchange of informations. This participation can allow to find consensus for win win proposals. No regret strategies are not free lunch strategies, they can have a cost.
If consensus is not possible, the second level of this good governance is the contract. Some priority of one stakeholder can be exchanged with the priority of another. This approach can also be implemented between state level and local level.
And finally, if no deal is possible, political arbitration should occur. In that case we recognize the usual command and control approach.
Material limits (as the capacity of charge) has to be an exogenous data, result of an expertise mechanism or the implementation of precautionary principle. In this case the actors are only able to discuss the method but not some targets which are fixed by an upper level.
This type of three steps process can solve the usual conflict between direct participative and representative democracy. The democratic institutions have the last word. But investments in information and education, evaluation methods, negotiation structures... essential in the two firsts steps, could allow subsequently a better management of political arbitration.
These is, in fact, a no regret strategy, where priority is given to triple win solutions, from the social, environmental and economic points of view. This issues are far beyond technique or formal optimization methods, they are of political and societal matter. We will speak of governance to qualify this decision process which allows to exhaust negotiation possibilities and consensus building before appealing political arbitration. The UNEP gives the following definition " *governance can be seen as the exercise of economic, political and administrative authority to manage a country's affairs at all levels. It comprises the mechanisms, processes and institutions through which citizens and groups articulate their interests, exercise their legal rights, meet their obligations and mediate their differences. Good governance is, among other things, participatory, transparent and accountable. It is also effective and equitable. And it promotes the rule of law. Good governance ensures that political, social and economic priorities are based on broad consensus in society and that the voices of the poorest and the most vulnerable are heard in decision-making over the allocation of development resources.* "[10]

	traditional decision process	**new governance**
decision process	control and command	consensus and contrat
text	law and rules	non constraining text collective references local Agenda 21...
actors	governments parliaments	major groups participation councils for sustainable dev.
information	centralized information secret	information sharing networking education, awareness
information processing	security, normalization large system, modelling	interface, network, fora, exchange protocols

Figure 1 : information status and governance

This governance process depends on a new status of information (see Figure 1).

[10] Governance for sustainable human development, A UNDP policy document

From this point of view, the participation principle proposed in Rio declaration " *environmental issues are best handled with the participation of all concerned citizens, at the relevant level* "[11] is not an ideological or ethical prerequisite, but the effective condition of implementing win/win strategies. Participation is not only a legitimate way for local levels, or individuals, to make themselves heard by upper levels, but also a way to those upper level to share global issues with citizens and rise awareness on sustainable development. This double role of participation is clear in the mechanism proposed to local authorities to implement sustainable development. " *Through consultation and consensus-building, local authorities would learn from citizens and from local, civic, community, business and industrial organizations and acquire the information needed for formulating the best strategies. The process of consultation would increase household awareness of sustainable development issues.* "[12] This simultaneous participation of all stakeholders guarantees implementation of integrated approaches. This issue sharing has to be considered with a cognitive vision of capacity building.

2. Cognitive vision of capacity building

Unlike cybernetics which search self-stability of a system, new cognitive approaches demand a sufficient dynamic so that creative process of system can occur continuously.

Integration of environment has to be seen as an incentive to activate this cognitive process. It could explain why, even though sustainable development should be based on integration of environmental, social and economic concerns, environment is often the driving force. Community management of fresh water for example, has been observed to lead to other common activities after having solved the collective access to fresh water. In industry implementation of Environmental Management Systems is mostly appear to be a mean to motivate employees. In a survey on ISO 14001 implementation, the first quotation of the assets among 11 others, is employees motivation (95%) just before image towards customers (85%).[13]

Strong and weak sustainability are often opposed, that is if financial and technical assets could substitute, or not, to natural assets. It is obviously the key question, but it has not to be necessarily concluded abruptly before any negotiation. We think that the collective ability to move toward sustainable development relies on capacity building of evaluation and dialog, i.e. governance mechanism as an asset for sustainable development. The information cost is an investment for better future decision. Win win strategies are short termed, but the condition of their implementation are investments for long term decision. This sequential vision, proposed in the climate issue[14], can has wider use. " *The challenge is not to find the best policy today for the next 100 years, but to select a prudent strategy and to adjust it over time in the light of new information* "[15].

The mechanism which can give rise to new informations and information exchanges must begin at a local level. Pertinent information is better catched by those which have the day to day use of this information, i.e. at the local level.

The Bellagio principle 10 says : " *Continuity of assessing progress toward sustainable development should be reassured by : (i) clearly assigning responsibility and providing*

---

[11] Principle 10, the Rio Declaration, Report of the United Nations Conference on Environment and Development, Rio de Janeiro, 3-14 June 1992

[12] Agenda 21 28.3., Report of the United Nations Conference on Environment and Development, Rio de Janeiro, 3-14 June 1992

[13] Arthur Andersen survey for 20 french enterprises, cit. in Décision Environnement, December 1998

[14] Changement climatique, du diagnostic aux enjeux économiques, Jean Charles Hourcade, Jean Jouzel, Revue de l'Energie, n°482, nov. 1996, pp 564-577

[15] IPPC, Climate change 1995, Economic and Social Dimension of Climate Change, Cambridge University Press, 1996

ongoing support in the decision-making process, (ii) providing institutional capacity for data collection, maintenance, and documentation, (iii) supporting development of local assessment capacity " Sustainable development is not a rational concept, simply derived from scientific evidences, but a procedural ones. Therefore, from the principles, we have proposed for sustainable development, to the action, it is necessary to implement new mechanisms of decision.

3. The 4 institutional mechanisms for sustainable development

Four kinds of tools emerged : (i) promoting local Agendas 21 ; (ii) creating sustainable development indicators ; (iii) developing multi-stakeholder approaches and (iv) network of experience exchange allowing identification of best practices or best technologies.

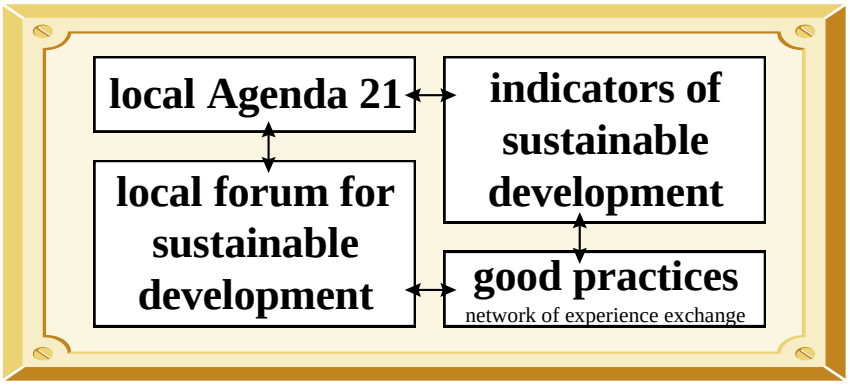

Figure 2 : four coherent tools for local implementation of sustainable development

A. Local Agenda 21

The Agenda 21, Agenda of the XXIst century, was signed in Rio in 1992. It has proposed to adopt the same approach on a local level.

The Local Agenda 21 concept was formulated and launched by the International Council for Local Environmental Initiatives (ICLEI) in 1991 as a framework for local governments worldwide to engage in implementing the outcomes of the United Nations Conference on Environment and Development (UNCED).

The implementation of « *Local Agenda 21* » is the way for local authorities to build sustainable development programs and action plans. The United Nations support those approaches : " *Transfer of expertise and technology, capacity-building, decentralization of authority through, inter alia, strengthening of local capacity and private-public partnerships to improve the provision and environmentally sound management of infrastructure and social services should be accelerated to achieve more sustainable human settlements development. Multi-sectoral engagement in the planning process through a local stakeholders group which serves as the coordination and policy body for preparing a long-term sustainable development action plan.* "[16]

Those local Agenda 21 are texts, or chart of engagements, which should be reference for all the stakeholders of the local community, but can also be the basis of the relationship with the state level. This should not be a one-time consultation process but an ongoing participatory process of local sustainable development decision making.

[16] Program for the further implementation of Agenda 21, adopted by the Special Session of the General Assembly, 23-27 June 1997, sustainable human settlements, 32.

B. Sustainable development indicators

Information for the sustainable development is the last chapter (40) of Agenda 21. The complexity and the interdisciplinary characteristics of sustainable development makes necessary to have informations about the four dimensions : social, economic, environmental and governance mechanisms. Those informations must be accessed by the stakeholders and integrated in a coherent system..

The UN Commission of sustainable development has launched a work program on indicators of sustainable development, which should result in a practicable and agreed set of indicators, suited to country-specific conditions, including a limited number of aggregated indicators, to be used at the national level, on a voluntary basis, by the year 2000. Such indicators play an important role in monitoring progress towards sustainable development at the national level and in facilitating national reporting.

We think that some dreams, about finding an unique indicator able to replace NGP, are just impossible. Even if the information has to be simplified for the decision makers through a small number of indices, this number is necessary much greater than one.

The set of indicators proposed by the UN CSD is suited for national evaluations and comparisons. We think possible to used the same approach in the formalization of the objectives of the Local Agenda 21 and other local approaches.

C. Fora of the actors concerned

Managing local Agenda 21 or use of sustainable development indicators should be managed in a multistakeholder approach. Consultation with community groups, NGOs, business, government agencies, professional groups and unions create a shared vision and allowed to identify proposals and priorities for action.

Placing in presence the different actors is a way of building strong consensus and identifying with more precision the real dissensus which should be solved by political classical decision. NGO and open social processes should not replace the usual political institutions, but help them to create a global concern toward sustainable development.

" Assessment of progress toward sustainable development should : (i) obtain broad representation of key grass-roots, professional, technical and social groups, including youth, women, and indigenous people - to ensure recognition of diverse and changing values ; (ii) ensure the participation of decision-makers to secure a firm link to adopted policies and resulting action "[17]

The UNCED Agenda 21 propose to established at the local level " *local forum* " for sustainable development. They should play the same role that the National Council for Sustainable Development but at a local level, they are the good place to discuss about the local Agenda 21. These forum can also play a role to "educate" the general public, on general environmental issues and how these affect their survival.

The multistakeholder composition of the fora is also a practical mean to introduce the transversal and holistic view necessary for the sustainable development.

D. Networking and generalization of good practices

The solutions, the good practice or the good techniques, can emerge every where in the world. It is necessary to evaluate them for their transfer and diffusion.

The availability of scientific and technological information and access to and transfer of environmentally sound technologies are essential requirements for sustainable development. It is important for Governments to promote the integration of environmental technology assessment with technology needs assessment as an important tool for evaluating

[17] Bellagio principle 8

environmentally sound technologies and the organizational, managerial and human resource systems related to the proper use of those technologies. Environmental concern must be integrated in the general technology concern and not as a added problem.
The exchanged experiences on the success stories is a way to gives a positive image of sustainable development. But bad experiences are also important, because they give also some precious advises. The networking of similar experiences for exchange is one strong tool to put sustainability in action. Modern electronic communication tools (as Internet) gives the opportunity to makes the connection between communities, enterprises, politicians or decision makers to exchange their experiences[18]. The UNDP as launched a program called Capacity 21 to implement sites for development. It can be proposed the cooperation between international sites concerned in sustainable development. They could exchange between countries and on a national level they could bridge different sectoral sites.

4. Conclusion

Procedural rationality and involvement of stakeholders at a local level are condition of implementation of sustainable development at all level. The information system is of the main importance to allow this implementation. It is based on a vision of the decision mechanism which is opposed to the usual command and control approach based on rationality. This vision can differ from country to country, or from language to language, which can explain differences perceived in the implementation of new tools for sustainable development.

[18] it is one of the objectives of the Internet site Agora21 to make possible those exchange through a suited information organization (http://www.agora21.org).