Towards indicators for institutional sustainability: lessons from an analysis of Agenda 21

Joachim H. Spangenberg*, Stefanie Pfahl, Kerstin Deller

Sustainable Europe Research Institute, Grosse Telegrafenstr. 1, 50676 Cologne, Germany

Abstract

In the course of evaluating the progress in implementing Agenda 21 [Results of the World Conference on Environment and Development: Agenda 21, UNCED United Nations Conference on Environment and Development, Rio de Janeiro, United Nations, New York] the “Commission on Sustainable Development” began developing a set of indicators of sustainable development. The first version was finalised in 1996 with the suggestion of 134 indicators [Indicators of Sustainable Development, Framework and Methodologies, United Nations, New York] and put to a field test, resulting in a final version published in 2001 [Indicators of Sustainable Development: Guidelines and Methodologies, United Nations, New York]. In both versions, the indicators are divided up into five issue areas: economics, environmental, social, and institutional. The further conceptual separation into driving force, state, and response indicators was given up in the final version.

Generally, (inter-) governmental organisations are explicitly referred to as institutions, which in the course of decision making have to take aspects of sustainable development into consideration. The use of terms related to institutional contexts in Agenda 21 implies that the underlying understanding of institutions is broader, since it refers not only to organisations, but as well to institutional mechanisms like procedures and legal norms (formal or informal, explicit or implicit systems of rules). Applying the even more extended definition of social sciences, including institutional orientations, like societal norms and *leitbilder* reveals an additional wealth of institutional aspects in Agenda 21, which—as opposed to organisations and mechanisms—obviously has not been considered as institutions by the authors.

We illustrate this with a complete “screening” of all chapters of Agenda 21 according to all three classes of institutions. This analysis uncovers various important institutional aspects of sustainable development that are not yet reflected in the current set of indicators. They are covered by a rather complete list of institutions in Agenda 21 [Deriving Institutional Sustainability Indicators, Final Report to the German Federal Environment Agency, Research Project No. 298 121 40, Wuppertal Institute, Cologne/Berlin, p. 188]; some examples from it are provided with this paper.

Furthermore, we present a proposal for how to structure the results of the analysis. For organisations it is obvious that not their very existence (yes/no) can be the basis for indicator development, but their effectiveness has to be the point of reference. While the DSR scheme provides no suitable analytical basis for indicator development, it offers a convenient classification scheme for results derived otherwise. This applies not only to the CSD indicators, but also for the institutional mechanisms.

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1. Introduction

In 1987, the World Commission on Environment and Development, chaired by Gro Harlem Brundtland presented the results of their 4 years of work, the report
"Our Common Future" (WCED, 1987). It was the final result of a process that was outstanding as compared to previous UN Commissions, like the Brandt-, Palme- or Nyerere-Commission.

1.1. "Our Common Future", UNCED, Agenda 21: roots and background

The report was innovative in content and procedure. Earlier UN reports had more or less focussed on one international problem each (like debt, peace, etc.), and then elaborated the linkages to other issues. In contrast to that, the Brundtland Commission had from the very beginning the task to reconcile two issues which were increasingly seen as a dividing line between North and South: environment and development (WCED, 1985). Following earlier debates in the UN, it was clear that development included economic as well as social development, resulting in the task given to the Brundtland Commission to organise a three-dimensional optimisation process in order to harmonise the environmental, social and economic dimension of human development (United Nations, 1983).

As all multi-criteria optimisations by their very nature, this one as well did not have one unambiguous solution, but offered a variety of options and diverging interests, covered by some quite unrealistic assumptions on growth and its limited environmental impacts as well as vague calls for international distributional justice. Nonetheless, the impulse to the public debate was significant, and is still tangible 15 years later. This may be partly due to the institutional innovation in the process: the numerous hearings in all continents, a secretariat that explicitly invited comments from the civil society’s sectors (“major groups”) in order to organise support for the principles of the document. These principles, i.e. balancing social and environmental interests by means of policy intervention were broadly and rightfully conceived as an attempt to produce a “counter-vision” to the emerging neoliberal hegemony. Furthermore, with the implosion of the Soviet Bloc and the end of the cold war happening in between the publication of "Our Common Future" and the United Nations Conference on Environment and Development, UNCED in Rio 1992, the institutional setting around the conference had changed. There was a lot of optimism about the future “peace dividend” to finance global development on the one hand, and about the future role the UN System might play on the other. Behind the screens, however, a massive fight of interests went on, with the US administration and EU governments on the one, and Latin American and some Asian Governments plus Western supporters (US Democrats, European Social Democrats) on the other (Roddick, 1998). It shaped the agenda of Rio 1992.

In summary, this most successful UN conference succeeded to put the issue of sustainable development as a reconciliation of economic, social and environmental needs and wants on the agenda of international politics. It failed however to develop a common base of understanding regarding the core, the underlying driving forces of development and environment problems. Ten years later at the WSSD in Johannesburg, these two facets—both based on the prevailing institutional settings—were still behind most of the conflicts. Little wonder, then, that the issue of institutions as a fourth dimension of sustainability immediately came onto the agenda when the attempt was made to operationalise the demands from Agenda 21 (Deller and Spangenberg, 1997).

1.2. Indicators: our starting point

As recommended in Chapter 40 of Agenda 21, the CSD in 1995 has undertaken to develop a set of sustainability indicators as a tool for assessing the progress towards sustainability and to communicate the achievements (UNDPCSD, 1995). In doing so, the CSD and the international organisations supporting it (in particular different branches of the UN system) had chosen to structure their reporting scheme along the lines of Agenda 21, reporting chapter by chapter. Furthermore, for the classification of the indicators in each chapter they decided to build upon the tested concept of "pressure-state-response" indicators as promoted by the OECD (OECD, 1993), based on earlier work from the Canadian statistical office. As a preliminary result, a working list of 134 indicators and their respective methodologies has been published (UNDPCSD, 1996). In order to meet the needs of describing progress in the sense of Agenda 21, their basic document and legal basis, the UN had to broaden the concept. Whereas the OECD indicators had been exclusively focused on the environment, the CSD had to take into account the other dimensions of sustainability. Hence, the economic and social
dimension were added to the framework, resulting in the need to extend the category of "pressures" to the more general "driving forces".

Although not mentioned separately as an additional fourth dimension of sustainable development, institutions turned out to be a necessary extension in order to include a significant number of crucial elements of Agenda 21, like societal and cultural determinants of development. The extension is furthermore justifiable by the growing theoretical insight in the relevance of institutions from social and political sciences on the one hand and by practical experience, not least from the Brundtland Commission/UNCED process itself on the other. Good governance towards sustainability, a key concern of current policy discourses, is not possible without appropriate institutions. The CSD has referred the institutional indicators to seven themes of Agenda 21 (Chapters 8, 23–32, 35, 37–40), proposing a total of 15 indicators in the first version, and 6 in the final one.

While this extension is a major achievement in itself and has been maintained in the final version, the set of indicators proposed has given rise to serious concerns whether it adequately reflects the institutional dimension of sustainability. In particular, when the indicators suggested were tested for their usefulness and practical applicability by a group of pilot countries from North and South, the institutional indicators performed far from excellent. A full third of them was amongst the ones rarely chosen by the pilot countries "due to non-relevancy, lack of clarity or difficulties in data availability, or that [they] needed further development". In the overall average, only 11% of the 134 indicators suggested fell into this category (UNDESA, 1999). With these weaknesses, the CSD is paying tribute to the fact that institutions unlike the other three dimensions of sustainable development are no long established field of research—only in the last decades more intensive work has been done, with a variety of often mutually exclusive scientific approaches. As regards institutional indicators for sustainable development, no systematic work has been done so far. Little wonder then that in the final version, 60% of the institutional indicators were dropped, leaving "institutions" with a third as much indicators as each of the other three dimensions. UNDSD explicitly called for additional work to substantiate this aspect (UNDSD, 2000); this paper intends to contribute to these efforts.

Given these preconditions, the intention of this paper cannot be to develop the ultimate set of institutional sustainability indicators. Instead, the intention is to contribute to the necessary international debate by providing a solid analytical basis and proposals for classifications. For this behalf, the objective of the research is spelled out explicitly and clearly, based on a working definition of institutions and a systematic analysis of their role in Agenda 21 as well as in the preliminary and the final set of CSD indicators. The results of this analysis have been used to develop a draft set of institutional sustainability indicators (Spangenberg et al., 2000).

1.3. The objective of this paper

This paper points out the weakness and the rather erratic nature of the current set of CSD indicators (section 2). It introduces some elements of a more systematic approach to assess institutions as key means of governance for sustainability (section 3 and 4) and presents some results (section 5). Section 6 concludes. In particular:

- Due to the current situation with a lot of the scientific basis for institutional sustainability indicators still missing, the key research objective has been to identify and classify the institutions in Agenda 21. In a second step, their objectives and the corresponding targets were identified as a basis for indicator development.
- Based on the analytical and methodological work presented in this paper, a set of supposedly scientifically meaningful (relevant, sensitive, indicative and robust) and politically useful (communicable, transparent, policy relevant and limited in number) national institutional sustainability indicators has been developed (Spangenberg, 2002). These indicators, however, are not the theme of this paper.
- The final purpose of those indicators is to provide a tool for guidance in sustainability policies, including monitoring of measures and their results, and communication to the public at large. This is not possible, however, if the analytical basis as presented in this paper is not scientifically sound or otherwise doubtful. Therefore, this paper focuses
2. Institutional indicators in the CSD system

In its Work Program, the CSD has listed a number of criteria for the selection of indicators, which have been the basis for preliminary set presented (UNDP/CSD, 1995). According to this decision, indicators should be:

- primarily national in scale or scope;
- relevant to the main objective of assessing progress towards sustainability;
- understandable, that is to say, clear, simple and unambiguous;
- realisable within the capacities of national governments, given logistics, time, technical and other constraints;
- conceptually well founded;
- limited in number, remaining open ended and adaptable to future developments;
- broad in coverage of Agenda 21 and all aspects of sustainable development;
- representative of an international consensus, to the extent possible; and
- dependent on the data, that are readily available or available at reasonable cost to benefit ratio, are adequately documented, of known quality and updated at regular intervals.

This list of criteria causes two problems: on the one hand, it does not specify which kind of indicators should be preferably chosen (see below for the different scales). On the other, it restricts the selection of indicators to already well founded, consensus based ones for which data are already available and which can be realised within the currently given constraints in national administrations. The latter results in a focus on historically experienced stresses, which at a particular time in the past have been of political relevance and led to the collection of data to monitor the respective issue. Such a retrospective institutional mechanism can hardly react proactively to potential threats of the future, or at least in due time when first symptoms become visible (Spangenberg and Bonniot, 1998).

The built-in principle of this “causes-damages-solutions” approach is that of “end of the pipe policies”: first wait for some damage to happen, then monitor the state (and probably assess the cost), and only then begin to take measures. Admittedly, after a proper analysis nearly every problem of sustainability can be described by listing causes, damages and possible counter measures, i.e. in a DSR format. However, this scheme is hardly applicable as an analytical tool, since its linear orientation leads inevitably to misinterpretations when applied to complex, non-linear self-organising systems, like society, the environment or the economy.

Consequently, this approach was replaced in 1999 by a new framework as recommended by the CSD expert group (UNSD, 1999). Its focus on themes and sub-themes leaves behind the questionable idea of assessing the causality chain and replaces it by characterising core problems. Consequently, there is no inherent provision to make sure that the measures proposed and assessed by the indicators indeed counteract the driving forces behind damages or at least cure the symptoms (as a matter of fact, all too often the match does not happen). The same problem arises regarding the targeting of driving forces behind the symptoms—erratic combinations of indicators are regarded acceptable. Consequently, the usefulness of the indicators for preventive and proactive policy guidance remains weak at best, in particular for the institutional indicators.

Nonetheless, giving up the DSR scheme is a great opportunity for the future development of institutional sustainability indicators: the DSR scheme was focused on situations where measures can be designed (tailor made) as a reaction to specific problems. Institutions, however, are only partly made; partly they evolve as a result of changing mindsets, experiences and public discourses. In this respect, the new approach provides more room for sensible indicator development than ever before.

2.1. The scales

The first problem mentioned above, the scale of indicators to be chosen, refers to a very basic problem of policy guidance with indicators: to apply them in a meaningful way, it must be clear which value of the indicator is more or less desirable than another one. This requires a gradient from good to bad results, which can have different forms:
• Nominal scales consist of only two values: a certain characteristic is either given or not. They are the least meaningful as concerns policy relevant information, but just for this purpose they are the easiest to agree upon in case of politically controversial themes. For example, whereas the effectiveness of a national sustainability council may give reason for intensive disputes, their very existence is easy to report.

• Ordinal scales are based on a hierarchy of qualitative states, e.g. in qualities of public participation. To apply them properly, the hierarchy (e.g. elections, right to know, right to be consulted, right to apply to courts, co-decision procedures) would have to be made explicit and the relative “distances” between the different classes defined. These distances, however, are often based on value judgements (is the step from right to apply to co-decision as big as the one from elections to right to know?) and are often not easily agreeable in international politics.

• Cardinal scales give quantitative information; indicators linked to quantitative targets (i.e. measuring the distance to target) have been called “performance indicators” (World Bank, 1995). To apply them, quantified targets have to be agreed upon politically—the most meaningful process for indicator development, but as well the most problematic one in the political arena.

We regard nominal scales as inadequate for measuring progress towards sustainability and will therefore propose to characterise institutions not by their existence, but by their effects. Based on this, specific need to rework the CSD list can already be identified, however without immediately obvious solutions.

2.2. The individual institutional indicators

The indicator scales presented in Section 2.2 will now be applied to the institutional indicators as suggested by UNCSD, based on the methodological information published by the United Nations (UNDP/UN, 1996; UN/DESA, 2001). This results in the following clusters (indicators suggested 1996 but withdrawn in the 2001 version are presented in italics):

Nominal indicators, which have a yes/no decision as unit of measurement. These are only of quite limited value for the purpose of policy evaluation and steering and are not considered adequate for the indicator set to be developed. They include

• National sustainable development strategies.
• Programme of integrated environmental and economic accounting.
• Mandated environmental impact assessments.
• National councils for sustainable development.
• Programmes for national environmental statistics.
• Representation of ethnic minorities and indigenous people in national councils for sustainable development.

Ordinal indicators give information of the factor reported is member of a specific category of cases, which would be considered better or worse than other classes. However, in most cases, neither the class is being made explicit, nor the hierarchy of qualitative states and the relative distances between them. As long as these preconditions are not given, or at minimum a desirable direction has been clearly defined, value judgements may make use of the information given, but no clear guidance is provided. (no explicit classifications found, implicit +)

• ratification of global agreements (how many of six specific agreements have been ratified or acceded to) (+);
• implementation of ratified global agreements (ratio of agreements legislated for and agreements ratified from a list of six) (+).

Cardinal indicators give quantitative information, referring it to the distance to target. The information given can be absolute or relative data, ratios, etc., however, without any explicit target the data remain quite meaningless. Sometimes if not targets, at least desirable directions are implied, when it is quite obvious if more or less, a growth or decline in the figure presented would be most desirable for sustainable development. These indicators include (existence of targets: + or −):

• potential scientists and engineers per million (−);
• main telephone lines per 1000 inhabitants (−);
• scientists and engineers engaged in R&D per million population (1000 for Africa, no targets elsewhere);
• expenditure on R&D as a percent of GDP (1000, 0.4–0.5% for Africa, no targets elsewhere);
• access to information (by number of newspapers circulating) (−), replaced by number of Internet subscribers per 1000 inhabitants;
• representation of major groups in national councils for sustainable development (% major groups representatives in NCSDs) (−);
• contribution of NGOs to sustainable development (number of groups) (−).

Besides eliminating a lot of indicators in the revision process, one completely new indicator has been added, a cardinal indicator of “Human and Economic Losses due to Natural Disasters” with no explicit targets. Including one risk indicator pays tribute to a broad debate on preconditions for sustainable development; however, it falls short of covering key economic and environmental risks (Crowards, 1999).

It is quite obvious that the nominal indicators are hardly suitable for the purpose of policy guidance and should be replaced by alternatives to be developed. The case is different for the remaining ordinal indicator: the hierarchy if states is not explicitly defined, but implicitly obvious and quantifiable, making it a laudable example of its kind.

For the cardinal indicators the situation is mixed. On the one hand, a number of indicators with serious flaws (Spangenberg et al., 2000) has been eliminated in the revised version, on the other one, the most interesting indicator “access to information” measured by the number of newspapers circulating has been replaced by the number of Internet accounts. The new version is focussed on the affluent countries, while it has little meaning for the majority of the human population who never made a phone call in their life. Interestingly, the old version was based on empirical research demonstrating a close correlation of the indicator and the access to political information in the respective country, making it a rare case in indicator development.

The indicators finally chosen are not linked to any kind of explicit policy targets, although such goals are frequently mentioned in Agenda 21. This helps to escape the risk of overly narrowing the understanding of political institutional mechanisms, but results in a specific weakness: responses have no obvious goal, and consequently indicators assessing their effectiveness are hard to define.

Nonetheless, some indicators that do not sound too meaningful today could become crucial policy tools once targets have been agreed upon (e.g. on research expenditure). So the question in these cases is less about the usefulness of the indicator as such, but more about the relevance and significance of the implicit targets for sustainable development and how to stimulate explicit and binding target setting.

3. Clarifying the concepts

3.1. The concept of sustainability

Sustainability as defined in Agenda 21 has four dimensions: the social, economic, environmental and institutional one, reflected in the four categories of indicators chosen by the CSD. Whereas the environmental dimension is quite clearly defined to be the sum of all bio-geological processes and their elements (referred to as “environmental capital” by economists), the social dimension (“human capital”) is not as easy to define. Individual human beings, their skills, dedication, experiences and the resulting behaviour are its focus, with the borderline to institutions (as an achievement of human interactions, confusingly called “social capital”) not as easy to draw. Institutions are understood here as described above, i.e. including not only organisations, but the system of rules governing the interaction of members of a society as well. This kind of societal interaction and the social norms behind are a necessary precondition for economic activities and shape them (without factual relevance to private ownership—a norm—no market economy could exist). Nonetheless, the economic dimension (“man-made capital”) is singled out as one specific subsystem of society, although this should not be understood as denoting the permanent interactions of the economic, social, institutional and environmental subsystems. The separation of these four dimensions is highly artificial and tends to hide the real World interlinkages. Even worse, whereas their four dimensions all represent established interests, the integration constitutive to sustainability politics must take place as linking activity, thus hard to monitor and evaluate within the given system. Thus, the structuring should be handled with; this given, however, the division in four dimensions is an extremely productive approach: in terms of system analysis, each of the dimensions represents a complex, non-linear, self-organising system. As a rule of
Consequently, in order to enhance sustainability, the following two main concerns deserve special attention.

1. The self-reproducing capabilities not only of the economic subsystem/man-made capital, but also of the social subsystem/human capital, environmental subsystem/natural capital and the institutions/social capital, are to be enhanced in a way that the maintenance of the systems/the reproduction of capital stocks is guaranteed.

2. For sustainable societies, a way of using these four kinds of capital must be found by which their sustainable use and self-reproduction become mutually reinforcing processes instead of producing deadlocks. Economically speaking, to maintain the four types of capital need investments to maintain their respective value as production factors.

Investment in social, human and natural capital cannot be investment in the usual sense of monetary investments as for man-made capital; the very nature and composition of these kinds of “capitals” requires other “currencies” for the “investments” to be made. Here, the economic terminology, as useful as it is to communicate the case to decision makers bears the risk of transposing economic connotations of the term “capital” totally inadequate to describe or even manage nature, humans and society.

3.2. The concept of indicators

The necessary key qualities of suitable sustainability indicators result from their purpose, which in the work programme on indicators (UNDP/PCSD, 1995) is defined as their guiding function for political decision making towards sustainable development. They ought to build the foundation for improved information and data collection, and enable a comparative and country specific analysis of the state of and progress towards sustainable development.

From our point of view, indicators should also refer to the targets chosen (if possible quantitatively, if not, at least in the form of directionally secure imperatives), be able to signal the success or lack of it in approaching them, be sensitive and robust in their construction. To serve for communication purposes, they must reduce complexity, be easily understandable and limited in number (see, e.g. Rechatin and Theys, 1997). In some more detail, and according to the selection criteria pointed out by the CSD, in general they should be (although not all of these recommendations can be met at all times):

- based on a sound scientific basis, widely acknowledged by the scientific community;
- relevant, i.e. they have to cover crucial aspects of sustainable development;
- transparent, i.e. their selection, calculation and meaning must be obvious even to non-experts;
- quantifiable, i.e. they should be based as far as possible—but not exclusively—on existing data and/or on data that is easy to gather and to update;
- limited in number according to the purposes they are being used for. In particular, communication needs just a handful of indicators, policy monitoring some more, expert scrutiny a lot of them.

Specifically for reporting to the CSD they should be:

- primarily national in scale or scope;
- realisable within the capacities of national governments; and
- broad in coverage of Agenda 21 and all aspects of sustainable development.

Furthermore, we have developed a number of additional criteria to determine the quality of indicators selected or proposed. Indicators, according to these criteria should furthermore be:

- independent, i.e. each indicator must be meaningful in itself;
- indicative, i.e. an indicator must be truly representative of the phenomenon it is intended to characterise;
- general, i.e. not dependent on a specific situation, culture or society, but be meaningful for different perceptions of reality, whether dominant for society or not;
- robust, i.e. directionally safe with no significant changes in case of minor changes in the methodology or improvements in the data base;
sensitive, i.e. they have to react early and sensibly to changes in what they are monitoring, in order to permit monitoring of trends or the successes of policies.

It is obvious that comprehensive policy steering is not possible without having more detailed indicators at hand than the limited number required for communication. On the other hand, the sheer number of 134 indicators in the old and 62 in the new UNDSD indicator system are still too few to give a complete picture of the sustainability of global development, but simply too many for policy communication. This problem is massively enhanced if the additional indicators for sustainable development already developed—useful as they are—are taken into account as well. For the North, the sustainable consumption indicators developed in UNDESA’s programme on changing consumption and production patterns CCPP (UNDESA, 1998) are a point in case, and for the South indicator systems for sustainable development as suggested, e.g. by the World Bank (1997), UNFPA (1998) or UNDP (2000).

Therefore, a hierarchy of indicators seems most appropriate, with the highest level useful for communication purposes, a second, more extended one for policy monitoring, and an even more detailed one for the implementation of politics, to be used by administration and experts. The old CSD system of DSR indicators can be understood as an expert system in this sense, and the new system as an attempt to develop a policy monitoring tool, while with the corresponding set of headline indicators has not been identified so far.

Since for communication purposes, the number of headline indicators has to be limited to a dozen or less, aggregation is a necessary step of indicator development. However, this should not go beyond the use of science based aggregation factors, because any further step would include prioritising based on value judgements, i.e. on steps which should be part of the political process and not of the scientific aggregation procedure. This results in the need of a more top-down selection of the key trends to be monitored as opposed to the more bottom-up aggregation process (Spangenberg and Bonniet, 1998). Only after the selection process for the relevant phenomena to be monitored has been completed (as this paper is trying to do for the institutional dimension of sustainable development), can indicators be developed. Although in most cases their selection will be guided by data availability and consistency, sometimes they will constitute new demands for additional data to be collected and monitored (OECD, 2001).

3.3. The concept of institutions in neo-institutionalism

3.3.1. The concept of institutions in the social sciences: historical and legal institutionalists

The current debates within the different sub-divisions of the Social Sciences under the heading of “Neo-Institutionalism” (see, e.g. Hall and Taylor, 1996; Pfahl et al., 1998) are too complex to be considered here in detail. Nonetheless, they are highly instructive when deriving an explicit, differentiated definition of the term “institution” for indicator analysis and development. Therefore, a short introduction on the various understandings of the term as developed in the scientific debate is provided, offering a background against which to derive institutional indicators for the CSD. However, it has to be cautioned right at the beginning of this overview that these approaches can and do overlap depending on the analytical interest.

According to Hall and Taylor (1996), the various schools of neo-institutionalism can be roughly grouped in three categories. The first approach leaves the path of the traditional understanding of institutions as organisations and takes a historical view of the entities it studies by looking at how these institutions influence political decisions and systems by establishing sets of rules. Historical institutionalists compare public policy and “emphasise the impact of national political institutions structuring relations among legislators, organised interests, the electorate and the judiciary” (Hall and Taylor, 1996, p. 6).

Legal institutionalist approaches stressing the role of law and legal systems in the development and form of political systems also fall into this rather broad category. Such studies are assessing the effects and roles of institutions in organising political relationships in democratic societies and the constitutional form they develop. For this behalf, they analyse various forms of democracy and their constitutional structures. Typical examples for this approach are the numerous
studies of the American Congress and the written and unwritten laws of policy advancement and logrolling (Murphy, 1993). Another example are those studies addressing the question regarding the role of law in the development of the European Union (Weiler, 1982) and the follow-up problem of the democratic reform of the European institutions in the course of deeper and wider integration (Joerges, 1996). The definition of institutions in this context necessarily builds on structuralist elements and is wider than that of an institution as a formal organisation. In this context institutions are “formal or informal procedures, routines, norms and conventions embedded in the organisational structure of the polity or political economy” (Hall and Taylor, 1996, p. 6).

3.3.2. Institutions in economics, in particular in public choice theory

Since the social science approaches do not always cope convincingly with the problem of keeping the various institutions as analytical units separate from each other, another school of institutional analysis took a different approach by concentrating on the relationship between institutions and individuals. They focus on how the individual or collective actor uses institutions according to his or her rationally defined interests. It assumed that these actors set up institutions in a way they serve them best. This phenomenon can also be observed at the system level, when a constituency decides over the specific form and realm of an institution in elections. Institutions play a pivotal role in the cost–benefit assessment of actors because stable institutions can contribute to lower transaction costs by creating security. They provide for common rules of communication and quite often are in a position to sanction breaches of these rules. Reliable institutions thus enable actors to take faster and cheaper decisions, because they do not have to take precautions as in the case of uncertainty. In addition, they facilitate collective bargaining processes by providing a general framework of bargaining rules. Specific property rights or tax systems are typical institutions in this context (Coase, 1960). Hence, rational-choice oriented approaches build on the assumption that institutions are organisational instruments, which serve the integration of individual and collective interests. In the course of the analysis, however, the institution itself and the question of its specific impact and nature fade away, because the focus on rational behaviour automatically concentrates on the actors and the choices they make.

Whereas this rational-choice approach gives a micro-level view of institutions, another neo-institutionalist utilitarian approach developed in political economy rather looks at the societal macro-level. It asks which and how institutional structures determine economic behaviour and economic development. The neo-classical understanding of individual benefit maximisation as explaining variable is complemented by the structure of markets and the form of exchange relationships in order to explain the solution of political efficiency problems. Subsequently, the analysis focuses on the description of the elements and conditions generating transaction costs, the design of property rights on the system level and the structural conditions determining the character of institutions. Accordingly, institutions are defined as “commonly devised constraints that shape human interactions. In consequence they structure incentives in human exchange, whether political, social, or economic. Institutional change shapes the way societies evolve through time and hence is the key to understanding historical change” (North, 1990, p. 1). Examples of typical institutions central to this approach are markets, plus the policy instruments and social conventions designing the various forms of market economies.

3.3.3. Institutions in sociology

The sociological approach to institutions takes a radically different starting point by interpreting some of the decisive elements of the approaches presented above from a sociological or organisational point of view. It looks at impacts and effects of institutions on social relationships and how institutions alter the behaviour of actors. The basic assumption of the sociological approach is that institutions are influenced by actors and their activities but, and this is the decisive difference to the approaches presented above, institutions also considerably influence actors by shaping their interests and behaviour (March and Olsen, 1984). By looking at the influence institutions exert on actors one also enters the realm of political culture and the study of norms and values because they were used as explaining variables for institutional influence. Social values are embedded in institutional structures and they feed back as institutional values.
into the rational evaluation of actors affected by the institution. For example, if an enterprise has established a certain form of employee–employer relationship an new executive director joining the enterprise at a later stage cannot implement new forms of such relationships without taking the old forms into account. Thus, not ‘objective’ efficiency considerations guide actor behaviour but what an actor perceives as efficient given the institutional structures or constraints. And thereby institutions determine daily life. “Life is organised by sets of shared meanings and practices that come to be taken as given for a long time. Political actors act and organise themselves in accordance with rules and practices, which are socially constructed, publicly known, anticipated and accepted. Actions of individuals and collectivities occur within these shared meanings and practices, which can be called institutions and identities” (March and Olsen, 1984, p. 249). In this understanding, institutions gain an autonomous and independent and guiding role in political processes. Between actors and structures, institutions act as an entity creating new value orientations or reference points, which influence actors and are likely to trigger changes in behaviour.

3.3.4. Conclusion

It is impossible to neatly delineate the economic perception, the judicial school, political science, and the sociological approach. All these disciplines (including organisation theory) try to answer questions fundamentally important to policy analysis. Nonetheless, they have different merits, and the sociological approach should be considered an important complement to the economic one.

The former can be understood as an answer to the sometimes artificially constructed rational-choice assumptions, which obviously do not fully capture political and social reality (nor do they claim to do so). In addition, pure rational-choice approaches have turned out to be of limited value in empirical political analysis, as usually the complex interests of actors are not fully known.

Thus, the main institutional debate in the social sciences can thus be summarised as the questions of “do institutions matter” and “what is the decisive element for institutional effectiveness: the agents or the socio-economic structure”.

4. Institutions for sustainable development: a political science perspective

Sustainable development is all about deliberate decision making in order to direct global development and system evolution towards a more sustainable route. Thus, it no surprise that the most appropriate definitions and methodologies for the purposes of this analysis emanated from political science. The study of institutions from such a distinct political science point of view draws from any of the previously mentioned approaches, depending on the research interest. The political science approach focuses on the politically relevant aspects of the role of organisations, decision-making processes and orientations, the impacts they have and the consequences they cause or contribute to. Very broadly defined, institutions are understood as the rules by which political decision making and implementation is structured. They can refer to social entities as actors as well as to systems of rules shaping behaviour. Thus, the political science approach do not necessarily try to decide the agent–structure problem described above, but takes into consideration that agents and structures have a dialectic relationship; both can equally play a decisive role. To find out which of the elements—agents or structures—actually determines a political outcome in a specific case, the analyst may use policy analysis as an methodological tool.

For the reminder of this paper, institutions are understood as in political science to be “systems of rules for authoritative conflict solution disposing of mechanisms for rule enforcement” (Czada, 1995, p. 205). In this understanding, political institutions “are systems of rules for the development and implementation of mandatory, societal relevant decisions and organs of symbolically facilitating societal orientation” (Göhler, 1997, p. 29). Political organisations meet both criteria: they are social entities, appearing as actors in political processes, as well as systems of rules, structuring political behaviour.

This definition encompasses “social and cultural rules” on the national and sub-national level only as long as they play a role in the political process. Whereas the general social rules (expectations, values, ideas and principles) are the domain of “ideas”, the domain of “institutions” as politically relevant social rules can be subdivided into institutional orientations
(norms, leitbilder), institutional mechanisms (procedures, legal norms) and organisations. However, it is generally difficult to determine the borderline between “general social rules” and “politically relevant social rules” on an abstract level. On the one hand, institutions reflect the values upon which a society is based, and on the other they influence the expectations, values and principles of a society, e.g. what is understood as “justice” and “solidarity”. Hence, institutions are empirical as well as normative phenomena.

For the purpose of this analysis, the focus will be on such politically relevant societal rules that appear in Agenda 21 as the most authoritative document regarding sustainable development (explicit institutions).

From this conceptualisation, two characteristics of institutions for sustainability can be derived which are suitable as analytical criteria for the identification of such institutions: they facilitate decision making, serving the various implicit and explicit goals of the sustainability paradigm, and/or they facilitate the implementation of such political decisions. These criteria will be applied to Agenda 21 in order to identify the institutions mentioned in the text, either explicitly as institutions or without referring to this character. One key question in the analysis is whether the topics proposed by the CSD as “institutional” are appropriate for monitoring the requests of Agenda 21 concerning decision making for sustainable development (Table 1).

Due to the difficulty to quantitatively assessing their effects with the help of indicators is of utmost importance. However, the diffuse impacts of institutions, the rebound effects of political results on institutions and the interaction of institutions between them and with the domain of ideas renders any attempt fruitless to suggest possible new indicators based on the causality-based DSR scheme. Instead, indicators should be derived from the explicit or implicit objectives and targets in Agenda 21, measuring the performance in implementing them. This is not to say, however, that new indicators, once defined, could not be classified according to the DSR scheme, as UNDESA has done with the final version of its set of indicators (UNDESA, 2001, p. 312).

4.1. Organisations as institutions

For organisations as the most tangible class of institutions, the following definition is suggested:

Institutions are organisations which structure the choice of action of individual or corporate and other collective actors within a society. This includes organisations, mechanisms and institutional orientations. All three have been applied subsequently in a complete screening of Agenda 21.

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### Table 1

<table>
<thead>
<tr>
<th>Domain</th>
<th>Elements</th>
<th>In Agenda 21</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ideas</td>
<td>General expectations of a society guiding its behaviour, values, ideas, principles</td>
<td>Explicitly and implicitly</td>
</tr>
<tr>
<td>Institutions II: institutional mechanisms</td>
<td>Administrative, political and social procedures, legal norms</td>
<td>Explicitly in Agenda 21</td>
</tr>
<tr>
<td>Institutions I: organisations</td>
<td>Structured temporary or permanent organisations with implicit and explicit and implicit internal rules</td>
<td>Explicitly in Agenda 21</td>
</tr>
</tbody>
</table>
circumstances, but do not (yet) dispose of a permanent organisational structure.

### 4.2. Institutional mechanisms

The second definition applies to institutions as formal systems of rules and indicates what they should facilitate. Institutions in this sense are for example, constitutional rules, organisational rules and standing orders of governmental bodies, associations, unions, NGOs, etc., written agreements, but also questions of tax law. Institutions in this sense offer constitutive and regulative rules that contribute to the very constitution of actors, prescribe institutionalist roles, open or close access to political decisions, constrain activities and shape expectations.

In this context, Agenda 21 predominantly refers to processes initiated by organisations or to be initiated by them, thus complementing the more static perception of institutions with a dynamic element. These institutional mechanisms address a much wider "area" than the organisations themselves.

Institutional sustainability indicators to be supported by the United Nations must by definition be tools for national reporting to the CSD (UNDP/CSD, 1996). Consequently, the CSD indicator system (and as based in the same definitions, the amendments developed here as well) falls short of covering the international institutional developments recommended by Agenda 21; for suggestions how to bridge this gap see, e.g. Oberthür and Buck, 1999; Pfahl, 2000).

In this sense, the term “society” in the definitions is understood as referring to societies within the borders of nation states. Analogous to the above definition of institutions as organisations, the definition of institutions as explicit systems of rules, covering institutional mechanisms as well as organisations then reads:

Institutions are mechanisms, i.e. explicit or formal systems of rules that structure the choices of actions of individual or collective actors within a society. This includes mechanisms that apply to all actors or groups of actors in a society as well as mechanisms that apply to some collective actors, if these mechanisms through these actors have a significant impact on society as a whole. Organisations and mechanisms can both be described as explicit systems of rules.

### 4.3. Institutional orientations

Obviously, not only explicitly stated rules and norms structure human behaviour, but also implicit orientations (informal systems of rules). Even if individuals meet in their roles as representatives of political entities, they behave according to social and cultural norms and role models. In particular, when no formalised norms exist or when existing procedures and legal norms are in contradiction with the socially and culturally prescribed “orientations”, these tend to dominate political decisions. This produces one of the key dilemmas of policy making: whereas organisations and institutional mechanisms can be directly influenced by policy making, institutional orientations cannot. Influence on orientations is mainly indirect, e.g. through education, information or propaganda or by role models and leadership. However, if deliberately developed policy proposals, e.g. for sets of legal norms or procedures are too far off the institutional orientations of the population at large, they will loose their legitimacy—and probably their supporters possibly at the next election. As this drawback is out of reach of short-term policy making, it can in effect be one of the most important reasons for the inertia of political systems, which in itself has ambivalent functions.

In analogy to the definitions of institutions given earlier, for orientations or implicit rules the term “institutions” is defined the following way:

Institutions are systems of orientations, i.e. implicit or informal systems of rules that structure the choices of actions of individual or collective actors within a society. This includes systems of orientations, which apply to all actors, or groups of actors in a society and systems of rules which apply to specific collective actors, if these rules through these actors have a significant impact on society as a whole. Organisations, mechanisms and orientations can all be described as systems of implicit rules.

### 5. Applying the concepts

So far there has been only limited work on institutions for sustainability (the governance debate may
offer some food for thought), and hardly any on indicators of institutionally sustainable development. Thus, the CSD’s set of institutional indicators, despite the critique from the testing phase has not only been the first attempt to “systematically” develop institutional indicators for sustainable development, it is still setting the standard in its field.

Consequently, when a comparative study on the relationship between aggregation and linkage indicators of sustainable development (Guinommet, 1999) analysed 26 initiatives by international organisations, research institutes and governments, it compared the indicators chosen to those of the CSD list, discussing their relevance and feasibility in the CSD framework. Despite the broad coverage of indicator systems, institutional aspects or indicators play a rather minor role. Only 5 of 26 projects mention institutional aspects at all, only 2 name institutional indicators, and in none of the projects institutional aspects are treated as of primary importance. Obviously, institutional indicators are a field of research where still a lot of groundbreaking work is needed.

5.1. Institutions in Agenda 21

The CSD list of indicators does not offer any explicit definition of institutions. However, the proposed indicators and the background documents imply an implicit definition of institutions, which at least covers organisations as formal political organisations with stable and durable organisational structures. Although not all organisations referred to in the indicator system fall under the “political institutions” category, we can assume that this is due to their respective contextualisation. Consequently, in the CSD’s understanding all kinds of political organisations, from public authorities to civil society organisations and even loose but structured networks like many NGOs seem to be included in the underlying concept of institutions. As according to UNDP/CSD (1995), the most important task of indicators—including institutional ones—is to guide political decision making towards sustainable development, the institutions as such have to be policy relevant as well. Thus, the first level of institutions as defined in this paper is clearly covered by the CSD approach.

Furthermore, the task assigned to indicators indicates a meaning that goes beyond organisations to include institutional mechanisms, which facilitate decision making and decision implementation towards sustainability. However, the indicators chosen sometimes seem to fail to directly address this aspect, adding another weakness to the ones described in previous sections.

Is this problem specific to the indicator system, or is it rooted in Agenda 21 as the basis for the CSD’s indicator development? If not so, which institutions covered by Agenda 21 are neglected in the system of indicators? To answer these questions, the definitions developed in the previous chapter have been applied to Agenda 21, examining which institutionally relevant aspects it covers and resulting in a complete and detailed analysis of the institutional content of this crucial document.

In the course of the analysis, institutional mechanisms have been found to have a clear basis in a number of chapters of Agenda 21. The Agenda asks for example, to “strengthen and design institutional mechanisms at the highest appropriate local, national, sub-regional and regional levels and within the United Nations system for developing a stronger scientific basis for the improvement of environmental and developmental policy formulation consistent with long-term goals of sustainable development” (United Nations, 1992, p. 428). Other examples address the need for stable and dependable structures in which science and research can contribute to sustainable development (e.g. in Chapter 35).

The way the word ‘mechanism’ is used implies that some sort of automatic and self-sufficient process should be established, i.e. institutionalised, fostering science for sustainable development and making this process continuous and maybe even irreversible. These deliberations focus not just on single institutions but on the political framework in which these institutions perform their task. Emphasis is given to how individual institutions or organisations are linked with each other through mechanisms and procedures.

This brief description of the subject matter supports the conclusion that, on the one hand, the CSD and Agenda 21 explicitly refer to the classical understanding of institutions as organisations, thereby meaning formal intergovernmental and governmental political organisations with formal or stable organisational structures. On the other hand, there are also
sections in the Agenda mentioning mechanisms and structures related to these institutions that implicitly point to the concept of institutional relationships and effects. While organisations and mechanisms seem to be conceptually covered by Agenda 21, orientations although mentioned frequently are never dealt with as institutions.

5.2. Methodology of the analysis

Given these insights, the goal to develop proposals improving and complementing the brief list of institutional CSD indicators can be subdivided into the following number of operational steps.

- Identify formal and informal organisations mentioned in Agenda 21 and their tasks; check whether or not they have been covered by the CSD’s set of institutional indicators so far. Quote or conclude from the context which goal they are intended to serve and suggest an indicator measuring distance towards that target.
- Identify institutional mechanisms mentioned in Agenda 21 (explicitly referred to as “mechanisms” or not), analyse their prospective tasks and check whether or not they have been covered by the CSD’s set of institutional indicators so far; develop indicators based on the level of fulfilment of the respective task.
- Identify institutions and particularly institutional orientations mentioned in Agenda 21 but not referred to as institutions; check whether or not they have been covered by the CSD’s set of institutional or non-institutional indicators so far; try to derive targets from the context and suggest indicators measuring progress.
- Identify institutions not mentioned at all in Agenda 21 but important for sustainable development; suggest indicators and see how these fit into the existing indicator system.

This paper focuses on the analysis, hoping to provide some fresh food for thought, while a number of possible indicators has been or is to be published elsewhere (Spangenberg et al., 2000, 2002; Spangenberg, 2002).

Screening Agenda 21 for its understanding of institutional aspects is far from being a simple, mechanical task: Agenda 21 reflects the factual and intellectual cleavages of the representatives of the signing governments, which result in partially contradictory passages or extremely diplomatic wording. To simplify matters, the first step of the analysis concentrates on how the Agenda mentions institutions, i.e. in what context institutions are addressed and what kind of entities or structures are explicitly or implicitly understood as institutions.

The procedure of this first screening is straightforward: noting where the text explicitly uses the word “institution” or related terms and documenting the context. In a second step, this screening is put on a solid and systematic basis by not searching for explicit references to institutions, but by applying subsequently all three definitions of institutions as developed earlier in this paper. In other words, not only those sections were marked either mentioning “institutions” or processes and mechanisms put in an “institutional” context, but also those, which in effect referred to institutions according to the definitions given above. As far as institutional orientations are concerned, the screening endeavour needs at times to be somehow interpretative, as the text does not explicit refer to “institutions” in this context at all. Therefore, formulations were accounted for as referring to institutional orientations when the policy context of the section clearly indicated an institutional meaning. As a result, the screening extracted what can rather unambiguously be seen as the “essence” of Agenda 21’s stipulations for institutions.

5.3. Results of the analysis

Interestingly, the screening of Agenda 21 for organisations discloses a duality of institutions. A first kind of reference mentions institutions as organisations and links them to tasks to be initiated or completed. All chapters of Agenda 21 refer to the United Nations system and its elements as actors. Other institutions are either international organisations, national and sub-national authorities (governments, indigenous authorities, religious authorities, non-governmental organisations, business or private sector, community groups) or task-specific organisations (e.g. universities, cultural organisations, industry-based institutions).

However, the various kinds of institutions are referred to in a markedly different way: whereas
when speaking of organisations Agenda 21 uses the noun “institutions”, mechanisms or rules are referred to by using the adjective “institutional” combined with “… mechanisms”, “… frameworks”, “… arrangements” and the like. This perception of institutions beyond “formal organisational entities” refers to “systems of rules” which structure collective (societal) decision-making and decision-implementing processes. Organisations are parts of these rules, but only part.

Regarding the requests for institutional mechanisms and orientations, Agenda 21 is far more explicit than in specifying the character, structure and function of these institutions. Most of these claims are mentioned in Chapter 8, the “core” institutional chapter, and re-appear in other chapters. Other systems of rules (sometimes on the boundary between mechanisms and orientations) include:

- the integration of socio-economic and environmental aspects in decision making (intersectoral or horizontal integration);
- the integration of decision making between international, regional, national, and local levels of decision making (vertical integration, “subsidiary”);
- the application of the precautionary principle in decision making;
- the participation of individuals, groups and organisations affected by the consequences of specific decisions on all levels of decision making. It includes providing access to information for individuals, groups and organisations which enables them to participate in decision making.

As mentioned, institutional orientations are not referred to in terms of institutions throughout Agenda 21. It seems that the definition of the authors (as heterogeneous as they have been) did not include these institutions in the implicit working definition used. Nonetheless, a wealth of orientations is included in Agenda 21’s institutional demands according to this pattern (Table 2).

For institutional orientations, a similar exercise could be conducted, but the results would not be too instructive: orientations by their very character are predominantly found in the category of driving forces.

### Table 2

<table>
<thead>
<tr>
<th>Driving force</th>
<th>State</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conditions</td>
<td>Frameworks</td>
<td>Changes</td>
</tr>
<tr>
<td>Structures</td>
<td>Linkages</td>
<td>Implications</td>
</tr>
<tr>
<td>Arrangements</td>
<td></td>
<td>Shifts</td>
</tr>
</tbody>
</table>

### 5.4. Systematisation according to the DSR scheme

The adverb “institutional” appears in connection with eight nouns, several of them showing similarities. In a heuristic attempt at structuring, they can be grouped into three categories, based on the part of the process of change towards sustainability they are referring to:

- the preconditions of the process: institutional conditions, structures and arrangements;
- the shape and structure of the process: institutional frameworks and linkages;
- the results of the process: institutional changes and implications.

First of all, this heuristic grouping demonstrates that Agenda 21’s understanding of indicators as mechanisms for change is not restricted to specific phases of the process of transformation towards sustainability, but covers the whole range from preconditions to results.

Secondly, the grouping serves to illustrate a point made earlier: most phenomena and their corresponding indicators can be sorted according to the DSR scheme, irrespective of whether it has been used in the underlying analysis or not. This allows to list the institutional mechanisms identified in Agenda 21’s institutional demands according to this pattern (Table 2).

For institutional orientations, a similar exercise could be conducted, but the results would not be too instructive: orientations by their very character are predominantly found in the category of driving forces.

### 6. Outlook

As far as the relevance of the existing indicator set is concerned the screening exercise clearly showed that Agenda 21 offers a lot more ground for institutional indicators than so far exploited by the existing
indicator set. The screening for institutions as systems of rules on different levels illustrated that these systems are included in Agenda 21 and are expected to take over a variety of tasks in order to promote sustainable development. However, only few of these tasks are covered by the DSD set of sustainability indicators yet. Given the importance attributed to those rules by the Agenda it seems due time that institutional indicators are developed to evaluate the progress of institutions towards sustainable development. Whereas organisations are at least partly covered by indicators in different sections of the CSD set, “institutional mechanisms” seem to be more neglected, with orientations coming last. Consequently, given their importance for channelling the behaviour of individuals and societies towards sustainable development, improving their monitoring seems even more urgent. If these mechanisms and procedures are implemented appropriately they can—according to the theory of institutions—significantly contribute to a permanent process redirecting the evolution of societies towards sustainable development. Causally, these mechanisms are also an instrument to link efforts to promote sustainability in various issue areas, thus representing one crucial element of an integrated approach to sustainable development.

The elements identified under the heading of “institutional orientations” such as the precautionary principle or clean production are particularly important as they can enforce the effectiveness of organisations and institutional processes. In order to do so, however, they have to be made explicit and be reflected in the indicator set.

This paper has undertaken to identify the weaknesses of the current system of institutional sustainability indicators as suggested by the CSD. It furthermore provides the analytical foundation for an improved system by suggesting an appropriate definition of institutions and a development procedure and quality criteria for indicators. Using these definitions on Agenda 21 unveils a wealth of institutions partly neglected, with orientations coming last. Consequently, “institutional mechanisms” seem to be more neglected, with orientations coming last. Consequently, given their importance for channelling the behaviour of individuals and societies towards sustainable development, improving their monitoring seems even more urgent.

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