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Transparency and value chain sustainability

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ABSTRACT

The rise of transparency on the public and political agendas is not an accident or fad, soon to be replaced by another timely topic in sustainability politics and governance. Transparency will remain a key topic in global value chains and will further develop as it piggy-backs on wider social developments such as globalization, the information age, and the shifting role of states in environmental governance. Transparency in value chains is bound up with positive connotations: the more transparency the better it is for the sustainability of chains and for the empowerment of consumers and civil society. But an overall positive past assessment of value chain transparency does not automatically extend into the future as new challenges lie ahead. This paper investigates the new challenges for value chain transparency and their consequences. Due to the growing importance attached to transparency in value chains it becomes a central object of power struggles, with uncertain outcomes. Markets and states seek to capture transparency arrangements for their own goals, which may not be in line with the assumed normative linkages between value chain transparency and increased power for consumers and civil society. In that sense, transparency is losing its innocence: more transparency is no longer always the best for citizen-consumer empowerment and for the sustainability of value chains. But value chain secrecy is not an attractive alternative. This opens a new research agenda on how transparency should be organized and arranged in value chains to live up to the promises of democracy and sustainability.

1. Introduction

Transparency is high on the public, political and research agendas in national and global environmental politics and governance. Roughly defined here as the disclosure of information transparency is particularly prominent in the field of environment and sustainability, although it is certainly not limited to this field. The origins are to be found in earlier right-to-know movements, legislation and practices in the 1960s and 1970s, particularly in the US and other advanced industrialized democracies. Over the last two decades transparency practices and developments in environmental and sustainability politics have started to spread around the globe to other nations and localities including China and Southeast Asia (Scott et al., 2009; Zhang et al., 2010) but also to transnational networks and institutions, including global value chains.

With this proliferation the scientific study of and reflection on transparency has enhanced to become one of the key subjects of (global) environmental politics research. Transparency in environmental politics is usually scrutinized, analyzed and assessed against two sets of criteria (Gupta and Mason, in press). First transparency politics and practices are assessed against normative criteria related to democracy, participation, accountability and right-to-know. As such transparency is believed to empower the weak and hold the more powerful accountable through reducing information asymmetries, enabling more equal participation around political controversies and enhancing accountability. Second transparency politics and practices are scrutinized against substantive criteria related to improved sustainability or more effective environmental governance. Transparency is then interpreted as environmental governance by disclosure, where disclosing is a governance act that has substantial outcomes in terms of environmental improvement.

In environmental politics—but also elsewhere (Lord, 2006; Birchall, 2011)—transparency is often analyzed with a positive connotation, not unlike concepts of democracy, participation and accountability. More than incidentally these four concepts (transparency, democracy, participation and accountability) are related to each other in environmental politics and governance, although the four do not always mutually strengthen each other. Transparency and accountability join democracy and participation in striving for emancipatory environmental politics by giving emphasis to and making room for bottom-up civil society and consumer engagements and counter-veiling power against dominant market and state powers. These market and state powers are often accused of

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being responsible for unsustainable practices and through transparency these powers are held accountable and are 'forced' to disclose their (un)sustainable practices. The common idea is then: the more transparency the better. That is: better for the environment, better for democracy and better for the empowerment of the oppressed/powerless. Of course, in contemporary environmental politics transparency-in-practice has many shortcomings, practical limitations, dysfunctionalities or pathologies. Consider only of the absence of standardization of disclosure rules/practices, the limited categories for which disclosure is mandatory, a focus on disclosing procedures rather than outcomes, and the (power) inequalities accompanying transparency as not all categories are equally subjected to transparency nor can all categories equally fulfill transparency requirements (Fung et al., 2007; Gupta, 2010b; Mol, 2010). Regardless of these shortcomings in principle transparency is still welcomed to be spread further around the globe and to be improved. So most transparency studies in environmental politics ask for further inclusion of powerful private entities and state institutions in mandatory rather than voluntary information disclosure duties (e.g. Stephan, 2002; Gouldson, 2004; Esty, 2004).

Throughout the years transparency has matured from a marginal phenomenon into the heart of modern society. It has also strongly merged in new areas such as the greening of global value chains (Section 2). Riding the waves of major societal developments (globalization, the information society, etc.; Section 3) this proliferation of transparency is no longer just about democracy, participation and the right-to-know of a few powerless green citizens and consumers on a few niche products in a few advanced countries. Increasingly transparency is also about powerful actors, about major global markets and the majority of products, about huge economic consequences and profits, and about surveillance. Although most studies concur with the generally positive assessment of the *past* development and performance of transparency for sustainable value chains one should not be naive in unconditionally claiming that for the *future* more transparency in value chains is always better for captured consumers and sustainability. The central questions focus exactly on current and future transparency institutions and infrastructures in value chains. Will value chain transparency continue to deliver environmental quality and consumers and citizens empowerment? Which drawbacks can already be found in different forms of current value chain transparency, and what are their consequences (Section 4)? And which major changes in the future transparency landscape endanger the positive assessment that more transparency is always better its promises (Section 5)? The conclusion is that transparency in value chains has lost its innocence of automatically advancing empowerment/democracy and sustainability goals. And the search is then for specific designs of transparency arrangements in value chains which do fulfill these original promises (Section 6).

2. Transparency in value chains

While the origin of transparency in environmental politics are to be found in the 1970s/1980s with the emergence of right-to-know legislations, the 1990s have shown two major developments. First, transparency in environmental politics spread widely to non-OECD countries (Mol, 2006; Florini, 2007). Second and much less noticed, the nature of transparency changed. Initially environmental transparency and information disclosure entailed place-based and state-organized systems facilitating the right-to-know about local environmental pollution. Well-known are the national (and European) Pollutant Release and Transfer Registers in many industrialized countries (se Mol, 2008: 139–140). More recently new transparency systems emerged that are placeless (attached to transnational flows), organized increasingly by nonstate actors (although more than incidentally backed by states; Auld and Gulbrandsen, 2010) and focusing on environmental advancements and improvements (rather than only pollution/extraction). The market driven disclosures in transnational genetically modified food trade provides a clear example of this (Gupta, 2010a). It can also be witnessed in the Tradable Green Certificates and Guarantees of Origin in the European renewable electricity market (Ragwitz et al., 2009) and more clearly even in the regulatory and voluntary carbon credits markets (Spaargaren and Mol, 2013). And placeless transparency functions in organic, green or otherwise sustainable products for instance related to food, fish, wood, and biofuels. Transparency becomes then detached from places and part of transboundary markets, networks and flows. These tendencies in transparency systems of course very much reflect current conditions of globalization.

Transparency with respect to global value chains falls into this new placeless form of transparency. Global value chains are increasingly confronted with voluntary and mandatory demands for transparency and to disclose information on the environmental and sustainability qualities of products and production processes along value chains. With respect to global value chains new infrastructures and intermediaries/powerbrokers are recently developing and emerging which facilitate, translate, certify, interpret and articulate information in order to make it available and useful for different categories inside and outside value chains and networks. The growing importance and calls for transparency in value chains have various logics, reasons and backgrounds, only partly overlapping with conventional place-based transparency of pollution/extraction. While transparency regarding place-based activities has been mainly related to disclosure of information for civil society, with respect to value chains transparency is also articulated within economic chains and by and for economic chain actors.

2.1. Value chain transparency typology

With respect to transparency in value chains four ideal types of transparency can be distinguished which in practice often mix (Table 1). Forms of traceability in value chains have been initially related to logistics, total quality management of chains and products and verification of product specifications. As such they refer to restricted transparency for a limited number of economic actors in value chains and are primarily motivated by economic interests.

Table 1
Four ideal types of transparency in value chains and networks.

Ideal type value chain transparency	Disclosure of information by	Disclosure of information for	Example
Management transparency	Upstream[a] economic actors in chains	Downstream[a] economic actors in chains	Total quality management
Regulatory transparency	Economic actors in chains	Regulatory and inspection bodies	EU tracking and tracing system
Consumer transparency	Economic actors in chains, certification bodies	Consumers and certification bodies	Eco-labels and certification
Public transparency	Economic actors in chains, certification bodies	Public (citizen-consumers)	Carbon disclosure project

[a] Upstream refers to chain actors higher up in the value chain such as primary producers and raw material processors. Downstream refers to chain actors lower in the value chain such as final processors, retailers and consumers.

This restricted so-called management-transparency has its origins in management sciences and logistics and is not directed at, nor does it involve, citizen-consumers or public authorities. A second mode of transparency in value chains relates to requirements of public authorities following policy and legislation on for instance food safety and product requirements, such as in the EU tracking and tracing policies. Here public bodies and authorities demand disclosure of information along the value chain for regulators and inspectors. A third and wider form of transparency in value chains involves disclosure of production and product information related to claims of sustainable production processes and products and to value additionality through public or private labeling and certification. Here transparency is meant to disclose information for consumers and public and private certification bodies and is strongly associated with the consumerist turn and what some call an alternative food economy (Glin et al., 2013). Organic, green, fair trade and all kind of other sustainability product and process claims are articulated in standards, disclosed in certifications, labels and information systems, and aimed at price premiums and niche market competitiveness. This can be labeled consumer-transparency. Finally value chains are involved in what could be called public transparency, where information on the sustainability of production processes and product characteristics is disclosed in the wider public domain to publicly legitimate production and products, to safeguard reputational capital of chain actors, to publicly defend claims of sustainability and labels being used, and to gain a competitive advantage. Here claims by value chain actors but also by certification bodies that codify and certify sustainability claims are scrutinized not just by consumers but by citizens, NGOs and the media in the public domain. The Carbon Disclosure Project, the activities of Transparency International and television programs on disclosing misinformation of product qualities and labels are examples of public transparency. In all four forms, disclosure and exchange of information can be and are seen as vital elements to improve sustainability in complex value chains and networks (Wognum et al., 2011). But especially in the latter two forms transparency is also motivated through normative claims on the right-to-know, counter-veiling powers and larger participation of and accountability to citizen-consumers in (agrofood) value chains. The current analysis will be primarily focused on the latter two types of value chain transparency as here transparency claims of environmental sustainability go together with those on democracy, participation, public accountability and counter-veiling powers.

2.2. Transparency infrastructures

What material and institutional form does transparency take in value chains/networks? Arguably the most prominent transparency institutions in value chains are systems of sustainability labeling and certification. A blossoming of labels and certification systems has emerged over the past two decades; some are regulatory based and enforced and others are privately regulated and pressured. Besides these new symbolic tokens that disclose sustainability qualities of products and production there are also product information systems which disclose more detailed sustainability information of production and products, for instance through Internet, at retailers where products are for sale, or via product tags. In addition there are transparency institutions that focus on information disclosure of producers that are part of a value chain/network, for instance through corporate environmental/sustainability reporting. Especially when these latter systems disclose sustainability information on upstream and downstream linkages in value chains they move beyond the conventional place-based transparency system. All these value chain transparency institutions/systems come together with new powerbrokers or intermediaries, such as standardization organizations (e.g. International Organization for Standardization ISO), certification bodies (such as FSC, MSC, ASC), verification institutes, auditors and stakeholder fora/roundtables (such as the Roundtables for sustainable soy, for sustainable biomaterial, for sustainable cocoa and for sustainable palm oil). These powerbrokers play a major role in ensuring quality, reliability and credibility of the information, of the systems that produces and discloses this information and of the organizations in the value chains. And these emerging powerbrokers and intermediaries are closely watched by watchdogs such as Transparency International, FSC Watch and conventional environmental NGOs such as Greenpeace and WWF. These different transparency infrastructures together make up a rapidly expanding information scape around value chains, which has both permanency and transformative powers.

3. Transparency: permanency and transformative powers

The growing popularity of, attention and calls for, and blossoming practices and infrastructures of transparency in value chains and networks are not accidents or fads that are soon to be replaced by another timely topic or development in sustainable value chains. Transparency in value chains is there to stay and to develop further. It will further spread not only because it is widely seen as a preferred norm but even more so because it is closely related to a number of wider social developments in globalized modernity: globalization, the information age, the consumer turn in value chains, and shifting modes of governance. We are most likely only at an early stage of a development towards more developed, full-fledged, comprehensive, standardized, geographically spread and institutionalized transparency in value chains.

To understand the logic, strengths and (transformative) power of transparency it has to be placed against the background of what I have elsewhere called informational politics and governance (Mol, 2006, 2008) and what others have referred to as regulation by information (Tietenberg, 1998; Case 2001). The concept of informational politics and governance implies that for understanding the current innovations and changes in environmental governance attention should focus on the centripetal movement of informational processes, informational resources, and informational politics. It is the production, the processing, the use, and the flow of, as well as the access to and the control over information that is increasingly becoming vital in contemporary environmental politics. Information and knowledge and access to them are becoming important resources in environmental politics; the sites and spaces of environmental controversy relocate to information and media scapes; and information motivates to change unsustainable behavior (i.e. naming and shaming, reputation, legitimacy).

The notion of informational politics of the environment brings coherently together under one common denominator a number of seemingly widespread developments such as the increasing significance and value of reputational capital of companies; the growing power but also vulnerability of legitimatory capital of environmental non-governmental organizations (NGOs); the emergence and power of new environmental monitoring arrangements involving multiple actors; the central role of conventional and new media in environmental politics; and the power and influence of accountability, transparency and disclosure in environmental governance. One can study each of these developments separately but it is vital to be aware and understand that such separate developments are interconnected as part of what Castells (1996/1997) has labeled the Information Age. Because informational politics—and with that transparency—is structurally embedded and institutionalized in this Information Age, transparency has some permanency. Few have yet analyzed and

understood in sufficient depth what the Information Age means for these informational changes in environmental politics and governance (see for some early attempts Esty, 2004; Mol, 2006; Fung et al., 2007).

In the Information Age the distribution of resources and power in environmental struggles and politics has changed dramatically. Since at least the 1960s and 1970s environmental activists and pollution victims have used information as one of their main resources in struggles on environmental controversies with the state and market powers-that-be, not least due to the shortcomings of the environmental movement in economic and political capital and resources. Now that informational capital is becoming increasingly valuable, powerful and influential in environmental politics and many of the environmental controversies are battled in the information scape, citizen-consumer environmentalists gain a comparative advantage. They have not just the informational capital but also the legitimacy and the trust to operate powerfully and effectively in the information scape, especially when transparency provisions and institutions limit an information monopoly by economic and state elites. In that sense transparency adds to the comparative strength and power of (collective) citizen-consumers in the information age. But it should not surprise us that with the empowering of transparency market and state actors increasingly aim to capture transparency for their own goals and thus challenge the initial advantaged position of civil society in informational resources.

4. Transparency troubles

The power of value chain transparency recounted above might hold in ideal typical situations. But the world has hardly any ideal situations and thus numerous shortcomings can be identified in transparency legislation, institutional arrangements, transparency infrastructures and practices. In order to live up to their normative and substantial aims current transparency arrangements are in need of further improvement. Starting from the fundamental notion that transparency is good and that consequently it needs only to be perfected and further advanced, numerous scholars have provided suggestions for improving the design and implementation of transparency institutions, infrastructures and practices (Florini, 2007; Fung et al., 2007; Klintman and Boström, 2008; Gupta, 2010b). Hence, there is a road to travel to further develop and implement mature transparency institutions and infrastructures that can live up to the promises of powerful and empowering transparency in value chains and networks.

The focus in this section however is on (consumer and public) transparency drawbacks that are not so much related to yet imperfect design and implementation of transparency provisions but rather on developments that endanger the fundamental idea of emancipatory transparency in value chains. From an extensive study of the literature six potential and/or actual pitfalls of stringent value chain transparency provisions and requirements can be categorized. These six transparency drawbacks are not all widely apparent currently and do not yet massively endanger emancipatory transparency practices and institutional arrangements in value chains. But ongoing calls for furthering transparency could emerge into such fundamental drawbacks. With these six points it becomes clear that value chain transparency is no longer innocent in-and-of itself.

Although generally assumed to empower the powerless transparency in sustainable value chains can as well empower the powerful and thus become an instrument in furthering inequality in value chain operations. This can work in various ways. Transparency provisions in several public and private international value chain arrangements call for quite sophisticated procedures, measurements, auditing and verification, and reporting. As many authors have noticed such provisions are relatively easily fulfilled by larger market and chain actors in richer and more developed states while smaller companies and those in poorer states have considerable difficulties in fulfilling transparency requirements (e.g. Haufler, 2010; Glin et al., 2012; Bush et al., 2013a). Such difficulties are exacerbated if implementation failures of transparency provisions are combined with sanctions or restrictions in market access as reported by many scholars in food labeling and certification schemes (e.g. Gulbrandsen, 2010). Often the larger and powerful food chain actors are more prominent in negotiating and designing transparency infrastructures and requirements for value chains and structurally advance themselves above more peripheral and dispersed small chain actors. This criticism is articulated by for instance Bush et al. (2013b) when discussing global aquaculture labeling schemes. Under such conditions furthering transparency empowers and advantages powerful market actors in international value chains and strengthen their position in environmental politics vis-á-vis small local companies/farmers in developing countries. And thus transparency works against its emancipatory promise. Fulfilling transparency requirements then works together with articulating and enhancing existing inequalities or creating a new dimension in existing power differences.

Second and related, putting transparency at the centre of new forms of environmental politics does not have equal benefit in all circumstances. Value chain transparency will only execute its transformative powers towards sustainability under specific conditions: when those meant to use the disclosed information have access to and literacy regarding this information; and when chain actors whose information is disclosed are responsive and vulnerable to accusations of poor sustainability performance. Both conditions are not always met. Consumers and the public domain in developing countries have limitations in access to and understanding of sustainability information on production and products of both domestic and international value chains. But literacy is not just dependent on the information receiver side of the transparency equation. Illiteracy of environmental information is also more than incidentally purposively created by those disclosing information as part of their strategies of greenwashing or laying smokescreens. Disclosed information is made unnecessary complex, aggregated and/or abstract. In addition not all companies and value chains are receptive to the risk of reputational damage. Companies and value chains that are poorly connected to the global economy or not very visible have a significant degree of inertia against reputational damage (Mol, 2009a; 2011) and take calculated risks of using unjustified sustainability claims and product certifications. China is a notable case where crimes with food quality and food labeling are increasingly being reported (Yamei et al., 2008; Cheng, 2012) and where transparency thus seems to dysfunction in truly disclosing food quality to consumers. In such circumstances transparency is of little help in improving the environment or in empowering the powerless and victims.

Third, rather than a means of empowerment transparency can also become implicated in further surveillance and control (Braman, 2006; Mol, 2006: 116; Birchall, 2011). This is very much related to the question asked by among others Gupta (2010a): transparency for whom? As stressed above transparency is normally interpreted as disclosure of (environmental) information from producers, chains, certification bodies and failing state authorities for civil society actors, consumers and pollution victims. The former are held accountable to the latter. This has been categorized as consumer or public transparency in Table 1. But this is of course a limited reading of possible architectures and recipients of transparency. The consumerist turn in environmental politics (Spaargaren and Mol, 2008; Oosterveer and Sonnenfeld, 2011) and

the fact that producers are also becoming change agents for environmental reform (as articulated in ecological modernization studies) brings another dynamic: transparency may also turn into the disclosure of environmental practices, resource use, and environmental impacts of citizen-consumers towards producers. And if that is the case should such transparency not be interpreted in terms of surveillance rather than empowerment and democracy? The smart utility meters in the electricity and water value chains in the Netherlands, the UK and the US, which can identify detailed personal water and energy use patterns and communicate this information back to utility companies for monitoring and billing purposes, are a form of transparency. Citizen-consumers in these countries are increasingly getting worried about the surveillance consequences of such developments. Similar concerns can be raised about monitoring of green shopping behavior by large retailers through the use of price reduction card systems. What would transparency and disclosure related to Personal Carbon Trading markets imply for the surveillance and privacy of citizen-consumers (Fawcett and Parag, 2010; Spaargaren and Mol, 2013)? Codes of conducts of transnational organizations do not only protect health and safety conditions but can also bring increasing monitoring, surveillance and control of workers in factories in developing countries. And consumer and environmental NGOs are increasingly required to disclose information sources, financial donations and spending so that this can be scrutinized by members but also by powerful state and market actors. None of this is necessarily problematic but it does pose a whole new set of state and market surveillance questions related to these forms of transparency in environmental politics.

Fourth, mature value chain transparency comes together with growing flows of information and claims. Scott Lash (2002) has been critical of the increasing informationalization, mediatization and digitalization of every aspect of human life. Is the Information Age not turning into a Disinformation Age? In a Disinformation Age information is out of control through information overloads, misinformation and disinformation. With the advancement of transparency and the popularity of information-based modes of governing value chain sustainability environmental politics can fall victim to a tsunami of environmental information and data smog (Shenk, 1997) and to drowning in disclosure. Especially if there are no powerful, legitimate and widely accepted institutions available that can be trusted to distinguish true from false information and that can help citizen-consumers to prioritize valuable above less valuable information, transparency can become the victim of its own success and disempower itself. This can be an unintended side-effect but also a conscious strategy among certain chain actors. It goes without saying that there are major interests that will not be unhappy with such drowning in disclosure outcomes and who will actively support disinformation, information controversies and information overloads. Rightwing coalitions of climate skeptics have been successful in developing such informational strategies (e.g. Jacques et al., 2008). It happens also around the blossoming of environmental information, labels and green claims on food products. Transparency and disclosure in value chains is then no longer associated with transformative powers towards sustainability but rather with stuck in the mud strategies. Especially in situations of information scarcity and secrecy and with certified information transparency seems to work well as a powerful transformative mechanism. But in situations of information overflow, the absence of legitimate information validators and certifiers (or the abundance of competing ones) and the prevalence of strategies of disinformation provision result in a lost power of transparency. Disclosure of information can then as much disempower consumers and civil society and obstruct and paralyze environmental reforms in value chains.

Fifth and directly connected to the former point, transparency will only work when the quality and reliability of information is guarded and guaranteed. Disclosure of unreliable and poor quality information does not bring us further in terms of environmental reform and does not empower the powerless (Dingwerth and Eichinger, 2010). But by the same token calls and requirements for quality and reliability of environmental information can turn against stringent environmental protection politics. The US Data Quality Act[1] is a clear case by which the Bush administration (2000–2008) used stringent and excessive information quality and reliability requirements and procedures to limit and chill transparency and information disclosure by the US EPA (see Mol, 2010). Due to this Act, the growing regulation *by* information disclosure of (environmental) agencies was counteracted by business and industry via the regulation *of* (environmental) information disclosure. In a more-or-less similar way disclosure requirements of minutes of government meetings under the Freedom of Information Act may have led to minutes no longer being recorded (Roberts, 2006). One starts to hear similar complaints in some value chains where transparency requirements related to voluntary certification tend to withhold chain actors from disclosing data and information as the procedures on data quality and reliability are believed to be excessive and excessively costly. In such cases transparency procedures and requirements *de facto* decrease transparency.

Finally the question emerges whether transparency actually improves environmental performance. The central idea is that disclosure of sustainability information will render producers of environmental damage and risks more responsive to regulatory and voluntary pressures. Can the often normative and procedural transparency provisions indeed be related to substantive improvements in sustainability performance of products and production processes? Fung et al. (2007), Mol (2006), Mason (2010), Kraft et al. (2011) and others have argued that there is a poor and often difficult to prove relationship between procedural provisions for information disclosure and substantive place-based environmental/sustainability improvements and impacts. Others have investigated the relation between transparency and environmental performance in international value chains, with similar ambivalent and sometimes contrasting conclusions (Gulbrandsen, 2010; Auld and Gulbrandsen, 2010; Wognum et al., 2011; Ponte et al., 2011). Three explanations are possible for this lack of a clear causal relation. The lack of a clear relation might reflect the current state of the art in transparency implementation, implying that transparency has not advanced far enough to witness causal environmental improvements. For instance, can it be that only quite advanced transparency will show a correlation or even causality with environmental improvements similar to what Buitenzorgy and Mol (2011) found for the relation between the degree of democracy and environmental improvements? Second, the lack of a clear relation might be connected to problems of establishing causal relations between transparency and environment quality improvements in value chains. This would basically mean that our current methodologies fall short to measure it. The third possibility is that something more fundamental is at stake with the hypothetical relation between transparency and environmental quality. This suggests that the hypothesis that more transparency results in

[1] Section 515(a) of the US Treasury and General Government Appropriations Act for Fiscal year 2001 (Public Law 106-554). The origin of the Act lies in a political dispute over air pollution, when the US Environmental Protection Agency proposed to tighten national ambient air quality standards for fine particulates and opponents felt unable to assess and review some of the supporting scientific data. The industry-sponsored Center for Regulatory Effectiveness was the main lobby group for this Act.

better environmental performance of products and production processes is incorrect. Future transparency debates will no doubt focus on these issues.

5. The future politics of value chain transparency

Regardless of these drawbacks transparency will not easily wither away but will rather become ever more important in environmental politics of global value chains. More calls for, practices of, infrastructures for, and legal provisions for environmental transparency can be anticipated. But transparency politics of the future will deviate from those in the past on at least four major characteristics.

As indicated above future environmental/sustainability controversies will contain major *information* controversies. Much more than in the past information is likely to become a major environmental battlefield and transparency is fully placed in the centre of it. With information and transparency moving to the centre of environmental politics and controversies issues of accountability, auditing and verification, the codifications of transparency requirements, and scandals around mis- and disinformation will turn out to be essential. This is the future frontier for environmental politics in value chains. The consequence is that future transparency will become multi-layered. Primary or first order transparency is related to disclosure and openness of environmental information in value chains and remains important. But transparency will also focus on the disclosing agencies and institutions themselves, the media and infrastructure 'owners' that facilitate or hinder transparency and the actors verifying, certifying and auditing environmental information (the new transparency powerbrokers). This might be called secondary or second order transparency. Hence, transparency politics in value chains will develop from simple first order transparency to reflexive second order transparency.[2] In the future transparency will no longer be simply the disclosing of information and the access to this information but will also involve a complex of reflexive questions surrounding the interests, the legitimacy and accountability, and the secondary effects of disclosure and disclosing agencies and institutions. For instance the media, green product certification organizations such as those of MSC, ASC and FSC, NGOs such as Transparency International and carbon certification organizations have all become subject themselves to transparency and verification demands and procedures. Reflexive transparency is a sign of the lost innocence of first order simple transparency and of a deepening of transparency towards more reflexivity. As such is should be interpreted as a progressive step forward. But there is no guarantee of power- and interest-free information disclosure. In his very timely and agenda-setting book *The Audit Society* Michael Power (1999) analyzed and identified some of the consequences and questions that will follow from this multilayered transparency and the need for not just verification of information but also of the verification institutions themselves.

Second, quite a few developing and transitional states and value chains in/from these states have had only limited experience with first order simple transparency, and are directly confronted with new reflexive transparency systems through their inclusion in global polity interactions, in global chains and markets, and in global civil society. Although transparency dissemination and learning across borders does take place one can identify the emergence and growing awareness of a global transparency divide. It is not just that first and second order disclosure and transparency infrastructures are better operationalized, institutionalized, implemented and responded to in developed countries. In globalized value chains transparency and disclosure requirements touch upon issues of competitiveness and access of developing and transitional countries to advanced markets. Within the International Organization of Standardization ISO, within private food certification schemes such as those of the Marine and Aquaculture Stewardship Councils and of Organics and within the biofuel certifications of the Roundtable on Sustainable Biomaterials strong protests from these developing countries can be witnessed against transparency and disclosure requirements (Krut and Glechman 1998; Ponte et al., 2011). The reduction or further narrowing of the global disclosure and transparency gap will become one of the key challenges for future transparency politics of global value chains. If this gap cannot be closed the future of transparency in global value chain politics will definitely look less bright, both from an empowerment/participation point of view and from an environmental improvement perspective. Transparency requirements will than basically strengthen power inequalities and frustrate truly globalized environmental reforms in value chains.

Third and related to the former point, the growing centrality of information in environmental politics of value chains will mean new balances of power and new resource allocation strategies of actors in comparison to those around conventional environmental controversies in value chains. Positions of chain and network actors, power balances, coalitions, resource dependencies, the rules of the environmental game, and effective strategies on environmental controversies in the information scape are fundamentally different from their equivalents around conventional environmental controversies. It is not easy to predict or conclude who wins and who loses in these new constellations. Winners and losers may differ under different settings and conditions: for instance in liberal democracies versus non-democracies; in sectors dominated by visible multinational versus sectors dominated by local small enterprises; in value chains of specialized products versus those of mass products. But prediction is also difficult because actors and interest groups constantly react to changing conditions and adapt and change their transparency strategies and coalitions accordingly. It was argued above that environmental NGOs with their advantage of legitimatory capital seem well placed vis-à-vis vulnerable multinational companies that have a reputation to protect private interests. And due to that advantage NGOs sometimes even aim or manage to become the new value chain organizers (e.g. Glin et al., 2012; 2013). But legitimatory capital of environmental and consumer NGOs is by no means given as it is vulnerable and easily melts into thin air following informational controversies. Greenpeace has definitely experienced that following the conflict around the sinking of the Shell oil platform Brent Spar in 1995 (Mol, 2008: 191). Relying on two decades of research on whose environmental information European citizens trust Fig. 1 shows that scientists and environmental NGOs still have a comparative advantage in terms of trustworthy sources of environmental information.[3] This trust provides them powerful positions in turning value chains sustainable through information and make them a willing coalition partner for value chain actors and certification institutes. But over time the legitimatory capital of environmental NGOs seems shrinking in this respect. Future value chain transparency developments have

[2] Here I draw parallels to the distinction between simple and reflexive modernity made by, among others, Beck et al. (1994). It partly parallels the idea of layers of transparency put forward by Klintman and Boström (2008: 180). A similar development can be seen around standards, where the development of meta-standards is emerging, for instance around European biofuels governance (Lin, 2010) and in the *codex alimentaris* (Hensen and Humphrey, 2011): standards that standardize (private) standards.

[3] This is similar to research findings on trustworthy sources of climate change information among US citizens (Leiserowitz et al., 2012).

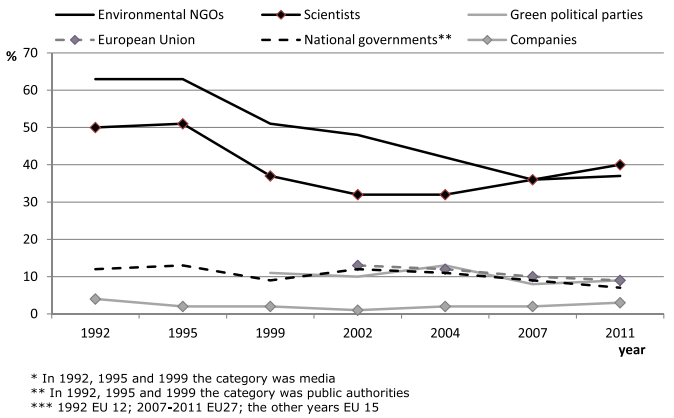

Fig. 1. Trustworthy sources of environmental information in the EU***, 1992–2011 (in percentage of respondents; European Commission, 2012). * In 1992, 1995 and 1999 the category was media. ** In 1992, 1995 and 1999 the category was public authorities. *** 1992 EU 12; 2007–2011 EU27; the other years EU 15.

no easy, automatic or undisputed winners or definite losers. Rather, these developments especially change the rules and resources of global environmental politics in value chains.

For the final point a return to Table 1 is essential. Management and regulatory transparency were always first and foremost related to logistics and product quality (rather than sustainability) and have been mainly driven by economic chain actors and governmental agencies. With its normative goals of environmental improvement, empowerment, accountability and democracy sustainability-oriented transparency in value chains has been predominantly related to, fuelled by and based within consumers and civil society. Sustainability transparency was mainly consumer and public transparency. With the growing importance of sustainability transparency in value chains this transparency will become stronger ruled and fuelled by markets and monetarization. Environmental information has never been isolated from economics and markets, for instance where it relates to the funding of environmental monitoring programs; where it involves markets for certified green/organic products, processes and services; or with respect to geographical information systems, remote sensing and other satellite-based information systems that are increasingly in the hands of private companies. But with the expansion and growing importance of transparency in environmental controversies and politics, states and market parties will understand the economic value and political importance of transparency. This can already be seen in an exponential growth of firms and systems that not only sell and market value chain environmental information and certifications but also market transparency and trust. All kind of public and private labeling, auditing and certification organizations form examples of this marketing of information and trust. Environmental NGOs also market their reputation, trust and legitimacy via financial compensation for their logos and endorsements as is for instance happening with WWF and its Panda logo on various products. In addition, the sharp boundaries between NGOs and business become blurred as in various countries (e.g. Russia; Mol, 2009b) NGOs become also market parties and in other countries (e.g. the Netherlands) consultancy firms profile themselves also as being rooted in a civil society community (e.g. SustainAbility, 2003; Anshelm and Hansson, 2011). In terms of Table 1 the distinction between the four types of value chain transparency become blurred. For instance, distinctions in actors and goals of management transparency and public transparency are mixed and merged in the case of tracking and tracing. This opens up a whole new set of questions on the relation between markets and transparency which will become pressing in the near future. How much of the normative undertones will be, can be, and have to be realized in such market-based and management transparency arrangements? And can these market-based transparency arrangements perhaps be more environmentally effective, for instance because traceability and tracking and tracing systems are not burdened with the normative undertones of participation and democracy? And if that is the case in what situations and settings and at what costs?

6. Epilogue

What has become clear from the analysis is that transparency as disclosure of information has lost it innocence in the environmental politics of global value chains. From the 1970s to the 1990s transparency had a positive connotation and was put in line with democracy, participation and even environmental reform. The general idea was that through transparency powerless environmental victims and advocates were empowered vis-á-vis the major market and state forces that failed to protect and ruined the planet's sustainability. Under the 21st century conditions of globalization and the Information Age transparency has only increased in relevance, power and importance. And with that the simple one-to-one perceived relation between transparency and emancipatory environmental reform is of relevance in only a limited number of cases, also with respect to transparency in and of sustainable value chains.

With further calls and initiatives for consumer and public disclosure of information regarding the sustainability of value chains comes also further critical scrutiny and debate of sustainable value chain transparency. And that is also very necessary now that value chain transparency practices and institutions have gained in complexity with their multiple layers and market rationalities and values. Stronger than before consumer and public transparency become governed by market, monetary and surveillance logics instead of only by counter-surveillance, democratic and civil society logics. And thus these two forms of transparency mix with management and regulatory transparency. This opens up a new research agenda. Transparency as such is no longer taken automatically as desirable but specific transparency arrangements and infrastructures have to be critically examined and designed on their social, distributional and sustainability consequences. Future research on value chain transparence will have to concentrate on questions of value chain transparency by whom, for whom and with what social and environmental sustainability effects for different stakeholders around the world?

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