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RISK REGULATION & PRECUATION

Dieter Pesendorfer

Queen's University Belfast,
27 University Square,
Belfast BT7 2GZ, United Kingdom
Tel.: +44.28.9097.3455
E-Mail: d.pesendorfer@qub.ac.uk

הפורום הירושלמי
לדגולציה וממשליות
האוניברסיטה העברית
הר הצופים
ירושלים, 91905

Jerusalem Forum
on Regulation & Governance
The Hebrew University
Mount Scopus
Jerusalem, 91905, Israel

regulation@mscc.huji.ac.il :Email
<http://regulation.huji.ac.il>

Risk Regulation & Precaution

Abstract: The precautionary principle emerged in the 1980s as a new idea in international environmental law and quickly became relevant for risk regulation in general empowering regulators explicitly to take early action in situations of serious harms. This paper provides a broad overview and a critical discussion of the principle and general patterns of its implementation and application to identify underlying changes in risk regulatory practices. After a short section on the need for precaution and a discussion of the role of principles in risk regulation it proceeds with the history of the principle and its successful global diffusion, before discussing the controversies about its meanings and weak and strong definitions. Discussing the precautionary principle in practice it will be argued that the moderate versions adopted in international environmental law and at the EU level and political and legal clarifications have especially led to an increased similarity in risk regulatory practices between countries which adopted the precautionary principle and those opposing that idea. With regard to (serious) risks most countries in the world have been moving towards a strict separation of risk assessment and risk management and a systematic use of benefit-cost analysis which makes the real change. Also the deliberative elements of the precautionary principle show ambivalent results as precautionary public policy not always involves more transparency or more participation. It is expected that risk regulation will remain political and controversial despite the various attempts to depoliticize risk governance.

Risk Regulation & Precaution

Controlling risks is a concern central to any regulation. Specific levels of risk taking and uncertainties are inherent to all social situations and decision-making, including non-decisions. Yet individuals and collective actors react in different, culturally framed and inconsistent ways to whatever they identify as safe enough or too dangerous. Reactions to harms, threats and dangers can be perceived, for example, as rational, irrational, appropriate, insufficient or ignorant depending on individual assumptions and abstract commitments to fundamental values which are by definition open for interpretation. It is commonsense that risks and corresponding alternative decisions are related to possible gains and losses. Risk regulation should try to avoid, to minimize or to reduce the most severe harms in a rational, efficient and effective manner. As risk taking is a precondition for and inherent to development and progress and always includes the possibility of failure, the right level of regulation is crucial and the overall design in risk regulation establishes path dependencies of economic development and innovation and therefore contributes to the overall level of risk in a society.

With nascent capitalism a new climate of risk taking emerged since the Renaissance. Insurance business and risk management based on a rational-mathematical analysis of the probability of certain harms from alternative decisions were established (Bernstein, 1996; Jaeger et al., 2001). Driven by rapid societal and economic transformations the decades since the 1960s then brought about strong concerns, particularly in the rich Western societies, with insufficient regulation of all kind of risks, accompanied by a growing distrust against specific industry sectors, science, experts and regulators that could not be overcome by new tools such as risk assessment and cost-benefit analysis (recently relabeled as benefit-cost analysis). Faced with numerous transnational and global risks with catastrophic potential and several major accidents, modern societies have been described as ‘risk societies’ in a ‘world risk society’ (Beck, 1986, 1999) and with regard to risk management as ‘post-trust societies’ (Löfstedt, 2009), in which decision-makers as well as the public got

preoccupied with risk, yet with fundamental differences between the poorest and richest countries. In the wealthy countries the rapidly increasing number of risk regulations with all kind of shortcomings and inconsistencies as well as new and persistent problems led to demands for more effective risk regulation, a better use of science in risk assessment and a more systematic evaluation of benefits and costs of measures to maximize what risk regulation can achieve (Breyer, 1993).

For some of the most serious, but uncertain threats to humans and the environment the precautionary principle emerged in the 1980s as a new idea in international environmental law. Compared to traditional risk regulation, mostly dependent on 'hard scientific facts' for legitimating action and focusing on the idea of prevention of well known possible effects and related probabilities, precautionary public policy empowers regulators explicitly to take early action in situations of severe harms. Successfully incorporated into a large number of international treaties, agreements, policy declarations and recommendations as well as in numerous national legal systems this principle won many supporters who have interpreted it as a cornerstone of sustainable development strategies with general importance and relevance in all areas of risk regulation. Precautionary public policy became part of discussions about overcoming the traditional technocratic model of risk governance and to establish a more transparent and adequate model that reflects the normative ideas underlying 'good governance' and 'better regulation' and takes the interests of future generations into account. In the light of past regulatory failures great expectations were given to the principle's implementation, be it a radical shift or at least the 'best practice' in risk regulation. Its new legal status promised to enact 'the most radical idea for rethinking humanity's relationship to the natural world since the 18th-century European Enlightenment' resulting in a 'great shift from a risk-taking age to a risk-prevention era' (Rifkin, 2004).

However, the precautionary principle has frequently been the subject of major critique and obtained vigorous opposition. For moderate critics it adds nothing new to sound risk regulation or should only play a very limited role; for most radical opponents it poses a serious and unacceptable threat to democracy, development, innovation and wealth. 'All the fears of our age seem to have found shelter in the word 'precaution', proclaimed Dupuy and Grinbaum (2004, p. 9). Others warned that

the principle would only lead to unjustifiable ‘aggressive regulation’ and ‘laws of fear’ (Sunstein, 2005). Because of its potential abuse for irrational, populist and protectionist measures the precautionary principle turned into the most controversial principle in risk regulation. As a result numerous academic and political discussions about its meanings, scope and application as well as legal disputes and court cases led to ongoing debates and a vast body of literature on consequences of its achieved status and reformulations and refinements which have affected and will continue to affect risk regulatory practices.

This paper provides a broad overview and a critical discussion of the principle and general patterns of its implementation and application to identify underlying changes in risk regulatory practices. After a short section on the need for precaution and a discussion of the role of principles in risk regulation it proceeds with the history of the principle and its successful global diffusion, before discussing the controversies about meanings and definitions. It will be argued that the moderate versions adopted in international environmental law and at the EU level and political and legal clarifications have especially led to an increased similarity in risk regulatory practices between countries which adopted the precautionary principle and those opposing that idea. With regard to (serious) risks most countries in the world have been moving towards a strict separation of risk assessment and risk management and a systematic use of benefit-cost analysis which makes the real change. It is expected that risk regulation will remain political and controversial despite the various attempts to depoliticize risk governance.

Why precaution?

Today’s most significant problems in risk regulation have highly complex problem structures and a transnational or global dimension. More than ever and even with all scientific progress there is great uncertainty about responses of complex biological, ecological, economic, social and political systems. In many cases the consequences of human action occur with a great delay in time. When ‘full’ scientific evidence will be available it might with high probability be too late for action or costs for adoption measures might become significantly higher. Popular examples are the extinction of

species and biodiversity, climate change, bioaccumulation of certain hazardous chemical substances, genetically modified organisms, nuclear power or particular applications of nanotechnology. As these examples indicate, action is not only limited by a lack of knowledge caused by complex natural and societal systems but also by powerful economic and political interests. Many cases moreover demonstrate that uncertainty can even increase with further research if new information reveals the presence of previously unknown or understated uncertainties. For advocates the precautionary principle's application is one crucial possibility to deal with complex problems of risk which can help to overcome the weaknesses of traditional approaches (Tickner, 2003). Now principles might be seen as rather weak and unimportant compared to other factors impacting risk regulation. So why did precaution become so important and how do principles in general affect action?

Controversies about the role of precaution in risk regulation are a logical consequence of serious interest conflicts related to expectations about significant gains and losses of risk taking in the contested areas in which this principle has become most relevant. They also result from the increased role of the global context in risk regulation. However, a part of the discussion is related to legal interpretations about the role of principles in general and consequences of their application in different jurisdictions. All policies are based on general goals, principles, approaches and rules which structure political action and contribute to specific policy styles. Democracies are based on principles such as freedom, justice, security and solidarity. Modern liberal economies have principles such as economic growth, welfare, trade openness and even full employment. In risk regulation several additional principles have been established such as the cooperation, the polluter-pays, the common burden, the proportionality in cost and gain and the sustainability principles. All principles have in common that they do not necessitate a particular direction, different to rules which simply fix the direction of action whenever they apply. While rules, structured hierarchically, shall not contradict to each other, principles not only can but frequently do contradict to each other. In such cases the 'right balance' between competing objectives must be chosen and consistency in application assured (Sands, 1995).

Principles are based on common sense and political, moral and ethical assumptions (especially the latter three have become highly relevant in areas of risk regulation

which led, for example, to debates how to incorporate moral and ethical concerns into risk governance). The interpretation of principles varies between different cultures as well as among individuals in a given society. Theoretically they have practical consequences. Incorporated into legal obligations they have to be taken into consideration by decision-makers and they become relevant for courts.

History and development of the precautionary principle

Giving consequently priority to human health and the environment and therefore weakening business interests as demanded in strong interpretations of precaution (see below) would indeed be a radical change from traditional risk regulation. However, the history of precautionary risk governance is much less radical. Emerging from clean air legislation debates in West Germany the precautionary principle (Vorsorgeprinzip) was incorporated into the Federal Government's first environmental programme (1971). The Air Pollution Control Act 1974 was the first law referring to the principle, followed by further laws in the next decades. Originally understood quite similar to prevention, the principle's meaning extended quickly to 'acting when conclusively ascertained understanding by science is not yet available'. However, risk regulatory practice was not radically different to other countries as decision-makers and courts took the technological development, scientific knowledge, proportionality and technical and administrative feasibility of measures into account (Boehmer-Christiansen, 1994; Jordan and O'Riordan, 2004).

Already in the late 1970s the term precautionary principle spread over to neighbor countries and became part of discussions on several regional environmental agreements. Poland (1980) and Switzerland (1985) were early adopters. During the 1990s, a large number of EC/EU member states too incorporated the principle into national legislation. Among those countries were Austria (1990), Belgium (1999), Denmark (1993), Greece (1994), Italy (1997), France (1995), Portugal (1995),

Sweden (1998) and the United Kingdom (1990). A number of applicant countries, including Hungary (1995) and Rumania (1995), also adopted laws referring to the principle, while in other European countries, including the Netherlands, Ireland and Spain, opposition from key actors stopped initiatives. Outside Europe several countries, including Australia (1991), Canada (1999), Japan (1994), Mexico (1996) (Pesendorfer, 2009), New Zealand and India (Marchant and Mossman, 2004, p. 6) incorporated the principle into domestic laws. France was then the first and so far only country that incorporated a reference to precaution into the constitution, namely in 2005 in the annexed Environmental Charta (Godard, 2006).

The increasing notion of the term precautionary principle and the underlying policy learning were supported by 'precautionary-type' policies in many countries – the Swedish chemicals policy is a frequently mentioned early case, sometimes even interpreted as the real inventor or at least equally important as Germany in developing the principle's core elements and features in the late 1960s. For other countries roots of precaution have been tracked too (e.g. de Sadeleer, 2007; Löfstedt, 2004). In short, especially throughout the 1990s a fast increasing number of countries around the world adopted the precautionary principle. However, the probably incomplete overview of countries with a reference to a precautionary principle is just an indicator for an assumed policy change in risk regulation, but this information as such does not allow conclusions about the scope of changes with regard to similarity in risk regulatory practices (Wiener, 2004, p. 76). The Netherlands for example, as a country without a direct reference to precaution in domestic laws, has not only been a strong supporter of the idea and incorporated the principle into many policy declarations and plans, but established moreover a precautionary practice in various areas of risk regulation supported by several court decisions (Pesendorfer, 2009). Moreover for countries without a reference to the principle in domestic laws precaution became relevant via international environmental law, as most countries ratified treaties or conventions calling for precautionary action.

As an international environmental principle the precautionary principle emerged in the context of the UN World Charter for Nature (1982), the Vienna Convention for Protection of the Ozone Layer (1985) and of the soft law adopted by the North Sea Conferences (1984 Bremen, 1987 London, 1990 Hague, 1995 Esbjerg, 2002 Bergen

Declarations). The principle was listed in the Brundtland Report (Annex 1) by the World Commission on Environment and Development (1987) and the 1992 United Nations Rio Declaration on Environment and Development recommended that the ‘precautionary approach shall be widely applied by states according to their capabilities’ (Principle 15). In February the same year, the Treaty on European Union signed at Maastricht formulated the goal that the Community’s environmental policy ‘shall be based on the precautionary principle’ (Article 130r(2); ex-Article 174(2) Amsterdam, now Article 191(2) of the Lisbon Treaty). Precaution was additionally incorporated into EU secondary law (in the areas of animal health, antibiotics, biocides, biotechnology, chemical substances, fishery products, general food law, habitats, Integrated Pollution Prevention Control, water protection, waste management). The Agreement on the European Economic Area referred to the principle in Article 44. At the international level it became part of a number of conventions in the areas of biodiversity and GMOs, chemicals policy, clean air policy, climate change, marine pollution and waste management. Additionally the principle found support in policy recommendations by UN organizations (e.g. UNEP Governing Council Decision 15/27 1989, 1990 UNECE Bergen Ministerial Declaration on Sustainable Development in the ECE Region, 1993 UNEP Caribbean Environment Programme), the OECD (1990 Recommendation on Integrated Pollution Prevention and Control, 1991 Declaration by environment ministers, 2001 Environmental Strategy for the 1st Decade of the 21st Century), the WHO (numerous recommendations since 1990, especially from WHO Europe), the FAO (1996 FAO Technical Guidelines for responsible fisheries), and the European Environment Agency (Pesendorfer, 2009).

Given this ‘success’ story, the precautionary principle’s legitimacy quickly increased. In many cases it was seen as a way to overcome inaction by states based on the excuse of incomplete scientific knowledge. For transition or developing countries the precautionary principle became also an attractive idea to legitimate action in a general situation of limited resources for research.

Controversies about terms, meanings, and weak and strong precaution

The debate on the core question how precaution might be or should be applied in law- and policy-making has remained controversial. In evaluating the overall effects of precaution, opinions range from unjustified protectionist measures to purely rhetoric or symbolic to practical success. Some argue that the legal status of the principle and experiences with its implementation have proven that it is sound, workable, legitimate and meaningful (Fisher, Jones and Schomberg, 2006), while others conclude ‘that it provides an open invitation for arbitrary and unreasonable decisions by both regulators and judges’ (Marchant and Mossman, 2004, p. 65).

Controversies start with the principle’s definition. The differences in understandings of the precautionary principle(s) have been summarized in three categories: those saying that ‘uncertainty does not justify inaction’, that ‘uncertainty justifies action’ and those calling for ‘shifting the burden of proof’ (Wiener, 2007). For many critics the differences in the various definitions are too great and make the principle arbitrary and capricious. Proponents argue that the principle is not only simple and clear enough, but that it is already established as customary law (Dupuy, 2007; McIntyre and Mosedale, 1997).

Similar to the principle of sustainability, various – although not that many – definitions of the precautionary principle have emerged. International declarations and conventions led to some refinements but also to different understandings. The most important differences are between weak and strong definitions. The latter demand precautionary action when there is a serious threat. The weak versions often use the terms ‘precautionary measures’ or ‘precautionary approach’ as substitutes for ‘principle’, signalling that these measures are preliminary (see below). Strong versions, included in early versions such as the soft law adopted by the North Sea Conferences, have mainly been advocated by NGOs and some academics.

The Rio Declaration (1992) included the ‘precautionary approach’ as Principle 15 in a weak form by linking its ‘wide application’ to action capabilities of states and

cost-effective measures. Similarly the Framework Convention on Climate Change (1992) called for precautionary measures which ‘should be cost-effective so as to ensure global benefits at the lowest possible cost’. The Kyoto Protocol (adopted in 1997, in force since 2005) calls in Article 3.3 for precautionary measures and adds to the Framework Convention text that ‘different socio-economic contexts’ should be taken into account. The Cartagena Protocol on Biosafety (adopted in 2000, in force since 2003) and the Stockholm Convention on Persistent Organic Pollutants (2001) refer both to Article 15 of the Rio Declaration within their Article 1 ‘Objective’.

Another famous definition comes from the so-called Wingspread Statement on the Precautionary Principle drafted and finalized by 32 authors (mostly academics) in 1998:

When an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically. In this context the proponent of an activity, rather than the public, should bear the burden of proof.¹

Additionally the Statement demanded ‘open, informed and democratic’ risk governance and ‘an examination of the full range of alternatives, including no action’. This definition was subject of many critics as it misses the word ‘serious’ before ‘threats of harm’ and because of calling for democratic participation and a shift of the ‘burden of proof’ which is often interpreted as ‘invitation for overregulation’ (Wiener, 2007, p. 606). The latter demand has its origin in the Swedish chemicals policy adopted in the early 1970s and has quite some tradition for products such as drugs, pesticides or food additives with specific hazardous properties. It found especially support among a larger number of academics and many consumer and environmental

¹ <http://www.sehn.org/wing.html>, last accessed in May 2010.

protection NGOs. But it also became a core element in the EU's biotechnology, chemicals and food policies.

The EU provided no definition of the precautionary principle within the Maastricht Treaty or in subsequent treaty reforms. As the principle was listed in the title on the environment, it was partly interpreted as only applying to that area. However as since 1997 it is a Treaty requirement that 'environmental protection requirements must be integrated into the definition and implementation of the Community policies' (ex-Article 6 TEU, Article 11 Lisbon Treaty) it became relevant and a key tenet for all areas of risk regulation. The EU Commission reacted to criticism against the 'too ambitious' and vague concept, its potential conflict with WTO rules and the ongoing debates about the scope of the principle with a Communication. According to this document the precautionary principle applies 'where preliminary objective scientific evaluation indicates that there are reasonable grounds for concern' (European Commission, 2000).

Although the principle's definitions in international law and within the EU are moderate, they attracted serious concerns. Majone (2002, p. 90f) and many others argued that the EU Commission's position would not be accepted by other WTO member states and that the EU would 'risk international isolation'.

'Utopia and junk science' vs. 'better safe than sorry': Precaution in practice

Majone (2002) listed five major shortcomings of the precautionary principle as formulated by the European Union: Besides lacking a sound legal foundation, it has potential to 'distort regulatory priorities' and 'to justify protectionist measures'. It would endanger international regulatory co-operation 'and it may have undesirable distributive consequences'. Altogether, he concluded, 'the precautionary approach is deeply ambiguous, and [...] this ambiguity is abetted by a lack of clear definitions and sound logical foundations' (ibid., p. 90; see also Majone in this volume). The most

common critique is that the principle is anti-scientific and adds little or nothing to standard risk assessment and management. It would be about values and emotions but not science. The ‘most reliable science’ would be replaced by ‘the most radical science’ (Morris, 2000, p. 19). Claims made under the precautionary principle would be unfalsifiable and open the way for speculation and ‘junk science’. If implemented, it would strangle technological and economic progress and only create a litigious society. In the worst case it would direct to overregulation of insignificant or even nonexistent risks. The principle would neglect risk-risk tradeoffs and its application would stop progress and innovation. In its strong version it would not lead ‘in bad directions’ but ‘in no direction at all’ (Sunstein, 2003). Slogans such as ‘better safe than sorry’, used by NGOs, have been criticized for ignorance and as unacceptable demands to stop everything that could cause harm. A paranoid ‘no risk principle’, critics continue, such as the NGOs demand for ‘a toxic free environment’ is impossible because a world without risks is impossible (and in case of the example an environment without toxics never existed). Similar allegations have been inherent in risk regulation conflicts for a long time. But they became stronger related to debates about sound, biased, junk, corrupt, business-dependent and critical science.

Advocates of precaution argue that the principle’s application is feasible and necessary in science-based decisions about risk because humans’ ability to predict, calculate, and control the impacts of certain activities is limited. Nobody actually believes in a society without any risk. The NGO slogan directly addressed the traditional ‘rational’ assumptions of ‘what you do not know is safe’ resulting in ignorance or denial of many risks and ‘late lessons from early warnings’. Advocates stress the fact that in cases of uncertainty ‘a number of perspectives may constitute equally valid interpretations of the available evidence’ and this creates a situation of ‘pluralistic realism’ (Stirling, 2003, p. 41). Reversing the anti-science argument to the critics is also part of the confrontation. Based on experiences in chemicals regulation Quijano (2003, p. 22), for example, demands ‘true science’ which he opposes to the ‘pseudo-science of economic interests’. Unsurprisingly a closer look at risk regulatory issues reveals that advocates of a (strong) precautionary principle not just call for a stop of an activity, but are pushers for alternative activities and underlying innovations (e.g. green chemicals vs. many current chemical products; organic farming vs. agricultural biotech products; renewable energy sources vs. nuclear

power). In short, the real conflicts about precautionary public policy are about antagonistic goals.

Several precautionary measures have been criticized as protectionist establishing unjustifiable barriers to trade (e.g. GMO regulations, including the EU's de facto moratorium on approving new GM products between 1998 and 2004 and the creation of GM-free zones, Mexico's moratorium on GM products 1998-2004, food safety regulations, chemical regulations). After the EU introduced its moratorium the US claimed that this has also negative effects on African countries. There was a general accusation that precautionary regulation would disadvantage developing countries (one example was DDT use in controlling Malaria in Africa affected by EU food safety standards). However, the main conflicts arose between the US and the EU since the Europeans emerged as the main advocate of the contested precautionary principle. Between the 1960s and 1980s the US had the leadership and influenced many early precautionary measures in the European Community. But since the 1990s the US approach shifted, including the decisions by the Bush administration not to ratify the Cartagena and Kyoto Protocols and its generally strong opposition against the principle. More and more a 'transatlantic divide' was observed. Especially with regard to climate change, biodiversity, green biotechnology and chemicals it has been broadly debated whether there is a completely different understanding of regulating risks in the EU than in the rest of the world in recent years (Ashford, 2007; Jasanoff, 2003; Jordan and O'Riordan, 2004; Vig and Faure, 2004). In opposite to the EU the US government argues 'that precaution is a sensible idea, but there are multiple approaches to implementing precaution in risk management. There is no such thing as a universal 'precautionary principle' in regulatory policy' (Graham, 2004, p. 1). However, the differences are not that great overall. Harremoës et al (2002) point at the US' promotion of similar ideas under the label 'precautionary prevention'. As Wiener (2004; 2007) shows, the level of precaution varies across different areas, with sometimes the US (not only in security policy or with regard to preemptive war) and sometimes the EU being more precautionary.

Within the WTO framework Article XX of the General Agreement on Tariffs and Trade (GATT) allows governments to act on trade in order to protect human, animal or plant life or health, provided they do not discriminate or use this as disguised

protectionism. In addition there are two specific WTO agreements dealing with food safety and animal and plant health and safety and with product standards. The WTO Sanitary and Phytosanitary (SPS) Agreement (Article 3.3) allows member states to introduce stricter standards as those in international standards, guidelines or recommendations ‘if there is a scientific justification’ and if there is no inconsistency with any other provision of the Agreement. Article 5.7 specifies:

In cases where relevant scientific evidence is insufficient, a Member may provisionally adopt sanitary or phytosanitary measures on the basis of available pertinent information, including that from the relevant international organizations as well as from sanitary or phytosanitary measures applied by other Members. In such circumstances, Members shall seek to obtain the additional information necessary for a more objective assessment of risk and review the sanitary or phytosanitary measure accordingly within a reasonable period of time.

Additionally the WTO Technical Barriers to Trade (TBT) Agreement tries to ensure that regulations, standards, testing and certification procedures do not create ‘unnecessary obstacles’.

In the rulings of the WTO Panel and Appellate Body it was confirmed that member states can adopt precautionary measures if they are justified by a prior risk assessment and sufficient scientific evidence. Measures must be provisional in nature and there must be evidence that further research is deployed with the goal of reducing uncertainty to an acceptable level ‘within a reasonable period of time’. WTO disputes made clear that decisions about justifiable, reasonable precautionary measures can only be taken on a case-by-case judgement. Now after several trade conflicts at the WTO level and controversies between WTO member states² and based on decisions

² http://www.wto.org/english/news_e/news00_e/sps_e.htm, last accessed in May 2010.

by WTO dispute settlement bodies and EU courts rulings it became also clear that the moderate version of the precautionary principle is possible and sound precautionary measures on case specific factors can be taken if a scientific risk assessment has been carried out before and clear evidence of harm is given (Stokes, 2008).

The overall role and future of precaution in risk regulation

The international debate led to an ongoing transatlantic dialogue on risk regulation practices, which resulted in the conclusion that most countries in the world, including the EU, are moving towards benefit-cost approaches in risk regulation which reduce the differences between countries using standard practices and countries calling for a precautionary approach/principle. More recent developments such as the international and European debates about the EU's chemicals policy change or the establishment of a Chemicals Agency and Food Safety Agencies were less concerned about the principle than about real consequences on industry's competitiveness and regulatory competition (Pesendorfer, 2006; 2007). Concerning biotechnology precautionary measures (in line with the Cartagena Protocol) are now broadly accepted as their preliminary application includes continued further research (e.g. field trials) which is also supportive and welcome for market creation. Many proponents of nanotechnology already drew a lesson from biotechnology and adopted a more proactive approach towards challenges deriving from precaution to avoid any delays in technology development. In short, precaution in its moderate version became one of the core principles in today's risk regulation. A strict and rigid implementation of the precautionary principle remains a concern for many critics and highly problematic for political, legal, economic, scientific and technical reasons. Science, uncertainty, 'true' facts and bias are crucial factors in every debate about risk in complex social formations based on antagonistic goals. Yet some still hope that initiatives to eliminate the use of the term precautionary principle will succeed: The OECD (2002) started advocating a 'precautionary approach' or just 'precaution' without any

additional terms as a part of standard risk analysis and risk assessment and explicitly limited to ‘preliminary measures’. The UK House of Commons Science and Technology Committee (2006) recommended that ‘the use of the term ‘precautionary principle’ should cease in view of the lack of clarity surrounding its meaning’. The Codex Alimentarius Commission discussed the incorporation of the principle into its guidelines for several years, but in 2007 the Codex Commission decided against such a change ‘when the ‘Working Principles for Risk Analysis for Food Safety for Application by Governments’ was finally adopted’.³ On the other side, critics such as Sunstein (2007) concluded that there remain significant areas where governments need to take radical measures for which a ‘Catastrophic Harm Precautionary Principle’ might be useful.

However, with regard to risks most countries in the world have been moving towards a strict separation of risk assessment and risk management and a systematic use of benefit-cost analysis which makes the real change. In some areas such as food safety or chemicals policy new independent agencies have been founded to depoliticize risk assessment. In some cases the new governance paradigm led to more transparent risk governance processes, but in many other cases governments used participation just for educating ‘the public in scientific rationalities’ or ‘as a simple exercise in democratic legitimation and trust enhancement’ (Everson and Vos, 2009, p. 15) or to avoid implementation deficits and to increase competitiveness by creating a business-friendly framework of ‘better regulation’ (Pesendorfer, 2006). In short, risk regulation will remain political and controversial despite the depolitization intended by the changes in risk governance.

³ <http://www.nutraingredients.com/Regulation/Precautionary-principle-left-out-by-Codex>, last accessed in May 2010.

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