

'International Organisations and Global Environmental Governance'

2005 Berlin Conference on the Human Dimensions of Global Environmental Change Berlin,
2-3 December 2005

Building a Global Renewable Energy Regime – What can be learned from other (environmental) regimes?

A discussion

Bernd Hirschl, Ulrich Petschow

Institute for Ecological Economy Research

Abstract

The promotion of renewable energies (RE) is a worldwide crucial challenge. RE contribute to the security of the energy supply as they reduce the use of fossil resources and nuclear energy, thus alleviating dependence on energy imports. They are also a very important future strategy to reduce greenhouse gases, therefore essential to meet the Kyoto-goals, to reduce climate change and to build up a sustainable energy system.

The description of the future role and importance show that the policy field "RE" is deeply embedded in energy and climate policies in general – but it is not that prominent represented in the international arena, especially compared to the institutional settings of the conventional energy industries. RE are not represented by one "concentrated" organisation or an influential global network. In fact, a distinct lack of coordination and cooperation of activities can be observed, which leads to a lot of inefficiencies.

There have been different suggestions on how to improve this situation. The discussion about the right path to gain such a global structure for the successful promotion has begun at the world summit in Johannesburg und especially around the international conference of the "Renewables 2004" in Bonn. While for example a global agency as part of the UN system presently seems to be far out of reach, solutions like a voluntary "frontrunner" network of interested states and private actors is discussed more concrete – and yet "under construction".

But what seems to be a realistic, useful and necessary design that meets the needs of the (international) RE industry – and what kind of experiences can give consultancy to this process? The paper wants to analyse the current situation of the emerging global RE regime, discuss the various forms of global governance mechanism and will compare the situation with former experiences (success, failures, structures) of other (comparable) global (environmental) regimes.

Content

Abstract	1
Content.....	2
1 Introduction.....	3
2 Reasons for an international institutionalisation of RES.....	4
2.1 Partially high growth continues on low absolute level	4
2.2 Atomic renaissance scenarios.....	6
2.3 The debate about costs	7
2.4 Structural and institutional barriers	8
3 International institutionalisation within the RES sector – discussions and developments ..	9
3.1 International treaties – the experiment of Johannesburg	10
3.2 Independent institution - IRENA	11
3.3 The „Renewables“ network.....	12
3.4 Integration into existing organisations	13
4 Categories and dynamics of international institutionalisation processes.....	13
4.1 Typing international environmental agreements: soft and strong.....	14
4.2 The example of the ozone problem: the Vienna convention and the Montreal agreement	15
4.3 Dynamics for the implementation of national and international regulations	17
4.4 The example of the IEA	19
5 Synopsis and preliminary conclusion	21
6 Bibliography.....	24

1 Introduction

Renewable energy systems (in the following RES) present a solution for the crisis of global energy supply and global climate changes. While fossil fuel which dominates today is becoming scarcer and scarcer, at the same time, the global energy demand is rising. RES, however, present an inexhaustible energy source. With the aid of converting technologies, sun, wind, rivers, maritime energy, biomass as well as geothermal energy can be used to generate electricity and heat. Further, fuel can be derived from biomass. The usage of these RES is environmentally friendly and stands in accordance to regional added value.

However, the high potential of RES described in the above manner is currently not reflected in corresponding global market shares or growth dynamics. Even though there are high growth rates to be found in some countries, the conventional energy system based on fossil fuel is still dominant on the global level, as well as in countries with the highest energy consumption such as the USA, in those countries with the greatest energy hunger, namely India and China, but also in countries with a high RES growth such as Germany.

For the first time ten years after the United Nations Conference on Environment and Development (UNCED) held in Rio de Janeiro and despite annual climate conferences since the 1990s, on the United Nations' "World Summit on Sustainable Development 2002" in Johannesburg, RES were one of the top priorities within the global focus. The result, however, was disappointing, since, owing mainly to the resistance of the USA and the OPEC states (see BMU 2005, Hirsch/ Brunnengräber 2003) no binding agreement concerning global target setting could be achieved. The states interested in RES then founded the Johannesburg Renewable Energy Coalition (JREC) which today includes 88 member states¹, and chancellor Schröder presided a voluntary intergovernmental conference, the "Renewables 2004", held in Bonn.

Since these events took place, the discussion about the adequate strategy and structures leading to the international institutionalisation of RES has increased.² The discussion starts at global target setting determined by an agreement and more effective coordination and reaches as far as the foundation of an autonomous and influential organisation. The international institutionalisation, in whatever shape, is meant to support the global diffusion of RES and might even gather the diverse and manifold activities around RES, ranging from the integration into the climate regime to development aid and the mediation of information and education.

There is no independent institution dedicated to the promotion of RES, the transport of information, the lobbying etc. on a global scale, such as is the case on the national scale. At the moment the promotion of RES on the international scale is covered by various institutions such as the International Energy Agency (IEA), the World Bank, various UN-programmes, e.g. concerned with environment and development (UNEP and UNDP), as well as the na-

¹ See www.europa.eu.int/comm/environment/jrec/index_en.htm.

² Institutionalisation means the process of forming or building institutions. The term institution, as we understand it, includes networks, binding forms like conventions or treaties, as well as the creation of organisations.

tional institutes for development aid (cf. Oberthür et al. 2004). But the primary task of the IEA and the World Bank has so far consisted of the stabilisation and dispersion of the conventional energy system. At the same time, the IEA itself, as well as the International Atomic Energy Agency IAEA are examples of how to distribute (conventional) energy technologies successfully.

If one defines the aim of a (significantly) increased global development of RES, the question rises, in what way this can be achieved on the international level and which degree of institutionalisation is required – and if such an institutionalisation is required at all. A glance at different yet comparable strategies of institutionalisation, e.g. those concerning the global diffusion of (conventional) energy systems³, as well as those concerning international processes of institutionalisation of other (environmental) problems, may prove helpful in order to detect successful strategies and forms. Besides the foundation of IEA or IAEA, the developing processes, backgrounds and the created structures of international agreements, treaties or organisations should be taken into account here as well.

Against this background, the following questions shall be analysed in this paper:

- What reasons speak in favour of an international institutionalisation of RES, and in what does the background of the debate consist?
- Which international strategies of the institutionalisation of RES are currently being discussed? Which actors favour which concepts? How may they be categorised?
- Which measures of performance and constellations are typical of other international (environmental) agreements or regimes?
- What experience may be transferred to the realm of RES and what may be concluded from this for an international strategy of institutionalisation?

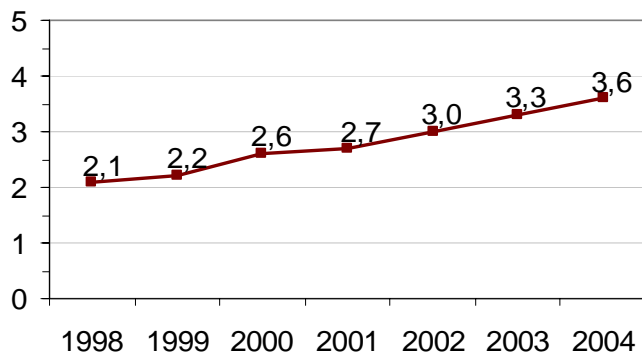
2 Reasons for an international institutionalisation of RES

2.1 Partially high growth continues on low absolute level

Remarkably, the growth of RES in countries with effective incentive measures, such as Germany or Spain, sometimes double- or threefolds. In other European countries such as Sweden, Denmark, Austria, but also in Japan (largely photovoltaics) or Brazil (primarily bio fuel), high growth rates may be noted. This is mainly due to special incentive measures of RES in general or to individual RES technologies. In Germany, e.g., the introduction of the so-called RES law (Erneuerbare-Energien-Gesetz, renewable energy act) has doubled the amount of RES electricity with regard to the overall gross power consumption from 5 % in the late 1990s to approx. 10 % at the beginning of 2005. Especially wind energy and photovoltaics proved to bear high growth dynamics. With more than 4 % of the whole electricity consumption in 2004, wind energy for the first time was able to supply Germany with the largest contribution of RES, from an absolute point of view. The long established hydro power still

³ By conventional energy systems we understand the currently dominant infrastructures of large-scale power plants and grids, largely based on fossil and (on the electric power sector) nuclear fuel.

Figure 1: Proportion of RES of primary energy consumption (PEC) in Germany



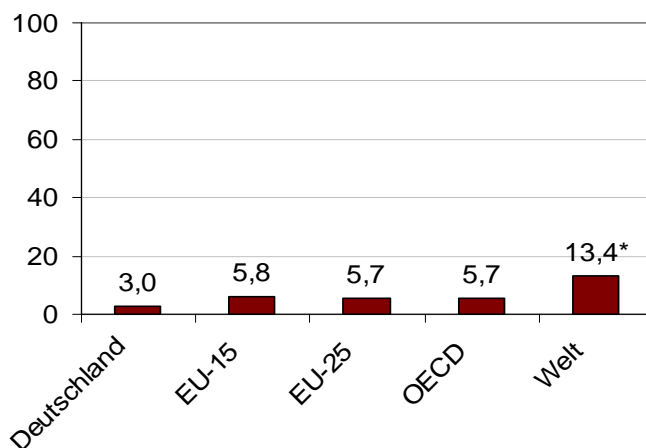
Source: own chart, data from BMU 2005

These dimensions of RES growth are also reflected on the international scale. In EU15 the proportion of 5,9 % (2003) is higher than in Germany, owing to partly very high proportions of hydro energy and biomass in countries rich in forests and water such as Austria and Scandinavia. Nearly the same proportions apply to EU25 and the OECD states. Merely on the global level a proportion of more than 13% even surpassed the above mentioned industrial nations. This can be traced back mainly to the traditional usage of biomass in the development countries and the inclusion of waste incineration (in total approximately 80% of the overall RES share), as well as to numerous large hydroelectric power plants (often based on embankment dams). This means that the proportion of new plants (wind energy, solar technologies etc.) rests on a remarkably lower level (cf. Karekezi et al. 2004).

A further classification of the dynamics of RES can be derived from the assessment of target achievement: Even in Germany, a country with a comparably very high growth of RES on the electricity sector, the goal of a share of 12,5 % by 2010 which has been defined in 2001 in a EU council directive (EU 2001), is probably barely going to be achieved – despite a growth that has proved higher than expected during the past years. On the total EU level the goal of

ranges beneath 4 %, whereas photo-voltaics does still not achieve 0,1 %, despite its high growth rates. However, an examination of the overall primary energy consumption of the Federal Republic (including electricity, heat and mobility) shows that the amount of RES in 2004 only reaches 3,6 % (data from BMU 2005b), while this figure includes a large part of traditionally utilized biomass for heat production as well as of older hydroelectric plants for the generation of electricity⁴.

Figure 2: National and international RES proportions of primary energy consumption in 2002



* including waste, for further explanations see above

Source: own chart, data from BMU 2005, RWE 2004

⁴ The actual RES proportion of 10 % of the German power consumption is based upon 5 % already existing before the RES law (Erneuerbare-Energien-Gesetz). These 5 % were derived mainly from hydropower and wind energy plants. Worldwide, the contribution of new plants towards the RES proportion is to be estimated even lower, owing to high traditional biomass and hydropower usage.

22% is not likely to be achieved, which might be related especially to the unsatisfactory usage of potentials on the heat sector.⁵

The major part of the energy supply is thus guaranteed via fossil fuel: The global proportion of oil (35%), coal (24%) and natural gas (21%) in 2002 amounts to approximately 80%. The global proportion of atomic power amounts to approx. 7% of the primary energy consumption (data of 2002 from BMU 2005).

In the face of the still vast and dominant influence of fossil fuel it seems likely that, due to path dependencies (technologies and infrastructures), but also owing to international economic and political networks, paucity of information or lacking experience, the globally increasing energy demand will lead to an increased demand of fossil fuel - at least in the short or medium term.

2.2 Atomic renaissance scenarios

A stronger establishment of RES is also related to the necessity of a stronger climate and environmental protection. Especially the debate concerning the severe consequences of climate changes has increased during the past years due to various climatic catastrophes. Nevertheless, a unanimous agreement about the enhanced promotion of RES does not exist. Particularly in the case of the great developed nations such as the USA, but also Russia, the fast-growing markets such as China and India respectively, as well as large industrial energy suppliers, atomic energy is once again becoming more and more a central issue – not only with regard to discussion, but also with regard to concrete planning, construction projects and laws.⁶ During the election campaign and in the light of the new grand coalition, German politics as well have begun to discuss the possibility of prolonging the operating time and the abolition of limitations.⁷ Regarding the recent developments and the international discussion, M. ElBaradei, Director General of the International Atomic Energy Agency IAEA, stresses: “[...] it is obvious that nuclear power is re-emerging in a way that few would have predicted just a few years ago”.⁸

⁵ “The shortfall compared to the 12 % target is caused by sluggish growth of renewable energy markets for heating and cooling (...) considerable extra action is needed in this sector to enable the full 12 % target to be reached.” (EC 2004)

⁶ “Nuclear power is another of America's most important sources of electricity. Of all our nation's energy sources, only nuclear power plants can generate massive amounts of electricity without emitting an ounce of air pollution or greenhouse gases. And thanks to the advances in science and technology, nuclear plants are far safer than ever before. ... We will start building nuclear power plants again by the end of this decade.” (G.W. Bush, speech of August 2005 on the occasion of the signing of the Energy Policy Act in the Sandia National Laboratory, Albuquerque, New Mexico).

⁷ Future chancellor Merkel on the VDEW-Kongress „Strombranche im Dialog mit der Energiepolitik zur Nachhaltigkeit: Nachhaltigkeit oder Ökologisierung der Energiepolitik?“, 8th-9th of June 2005, Berlin.

⁸ Statement during the 49th Regular Session of the IAEA General Conference, 26th September 2005, Vienna.

The argument supporting the extension or prolongation of nuclear energy primarily refers to climate protection arguments, as well as to low operating costs of the existing, mainly amortised plants. The proponents of greenhouse gas usually merely mention the operation of atomic plants. An examination of the complete trajectory, from the derivation and processing of uranium to the dismantling of the plant, presents emission values (CO₂ per produced kW/h) not only exceeding those of any RES, but even those of gas powered CHP plants using produced heat. Additionally, these values do not even consider the yet unresolved question of disposal.⁹ The issue of costs presents a similar case. Besides low production costs, high subsidies for the development and introduction of the technology as well as the liability costs not brought to account, protection of plants and transport or the unresolved problem of final storage remain ignored.¹⁰ Against this stand the privatised profits of the operators, who have financed the unrelated diversification and extension of their corporate groups partly with the acquisition of companies from liberalized markets (e.g. telecommunication, disposal, water and sewage).

2.3 The debate about costs

On the other hand, comparably high costs and the thus necessary incentive measures and subsidies are often used as a central argument against a (fast) expansion of RES. This argument concerns the fact that only “cost-effective RES”, i.e. such technologies already “competitive on the market” (in comparison to the aforementioned amortised large-scale plants based on fossil and nuclear fuel), should become involved at all. Yet the debate of costs refers to proximity to the market and cost-effectiveness of the incentive measures. Participants of this debate on promotion in Germany which is mainly orientated to the static and direct costs or a comparison of costs, are to be found e.g. among the traditional large-scale power suppliers (in Germany represented mainly by the VDEW), among the whole range of political parties, especially the FDP, as well as parts of the CDU, and among the administrative division of the ministry of economics (cf. Reiche 2004). The debate of costs, however, only in few cases considers dynamic effects such as the advantages of innovation and the creation of lead markets, the advantages of the diversification of energy supply and independence of raw materials or the regionalisation of the energy production with the accompanying effect of jobs being created. Similarly, the extraction and the transport of raw materials which are becoming scarcer and scarcer rise questions of security and the danger of war which are mainly being ignored.

⁹ These results are taken from the GEMIS database (Global Emission Model for Integrated Systems, up-to-date version 4.2), in which various processes of generating energy have been energetically rated and made accessible for the public (www.gemis.de).

¹⁰ More detailed data on the various subsidy facts is not available, since many states do not present these clearly. Ratings on the basis of accessible figures of the IEA, the EU or national subsidies, however, confirm considerably higher subsidies, especially in comparison with the sums spent on RES. Hermann Scheer mentions a projected value of “at least a trillion dollars” for the worldwide state promotion of atomic energy. During the past 30 years, however, RES would range around “40 billion at the most, including the market penetration program for renewable energy sources (Markteinführungsprogramm)” (Scheer 2005: 112)

In the same way, the debate about the purely operational costs of the production of energy ignores additional costs which are related to so-called external effects. These external effects are a result of the production of final energy via fossil fuel or atomic plants, but also of the usage of RES (environmental, health and climate damage). The external costs are being paid largely by the citizens (taxpayers), instead of the responsible businesses. Research regarding the described problems is still at the beginning and has to deal with severe insecurities in the assessment and monetary quantification of these effects. A recent European study has come up with follow-up costs of coal and oil of 3 to 8 eurocent per kWh. The costs for photovoltaics, in contrast, amount to 0,6 eurocent/kWh, and for wind energy to a mere 0,5 eurocent/kWh (cf. EC 2003).

2.4 Structural and institutional barriers

The above described developments within the international energy system can be resumed in the following fashion: Firstly, what clearly prevails is a dominance of fossil fuel, as much on the global scale - especially in those countries with the currently greatest energy hunger - as in the countries showing a considerable growth within the RES sector. Secondly, what is clearly increasing in the face of climate change is the debate of a renaissance and extension/expansion of nuclear energy, instead of a significant strengthening of RES on the international scale. This also applies basically to the global level, as to countries such as the USA, India, China and Russia, but also to the Federal Republic of Germany. Thirdly, the central argument against RES, the comparably high costs, tends to be supported by economic cut-outs (usually microeconomic) which do not take into account a systemic examination of costs (including infrastructures, the providing of raw materials) or long-term (dynamic) economic considerations.

In this connection, further central restraints – besides the costs - become evident preventing a strengthened and more consequent extension nationally as well as internationally. These hindrances of RES include the basic differences of *technological* nature between the rather de-central and small-scaled RES and the structure of conventional energy production traditionally based on large-scale power plants and big distribution networks. A dynamically growing market with small-scale RES may be able to undermine the current profitability and the future protection of investment of large-scale plants.

Further (with regard to the aforementioned aspect), there is a difference within the *structure of market players and stakeholders* concerning plant manufacturers, operators, capital providers etc. The RES sector and the individual RES branches respectively, consist of a clearly heterogeneous, larger number of mainly new SME, even though, for example, some global fuel suppliers (BP and Shell) already hold considerable market shares of the production of photovoltaics and great energy supply companies (E.ON, Vattenfall, RWE) are planning a large scale entry in offshore wind farms. Opposed to this there are the few, partly oligopolistic and monopolistic, (very) large energy suppliers, net operators and fuel producers of the conventional energy system.

Looking at the institutional structures of RES and conventional energy economics, further differences become evident, especially regarding the representation of interests. On the national scale, the example of Germany proves that the RES technologies have become institutionalised within their own trade associations and that there are only few overlappings with „meta“-institutional economical structures (conventional energy economy, engineering indus-

try, agriculture, fuel industry). Within the power sector, e.g., the central societies, the German Electricity Association (VDEW) for conventional energy economy and the German Renewable Energy Federation (BEE) oppose each other as counterparts.¹¹ On the one hand, such a separation of interests documents the normal process accompanying the emergence of new technologies and economical branches, on the other hand, it also enhances the lines of confrontation within the energy system between RES and conventional energy economics.

On the international scale, such an institutional separation does not exist – there neither being a specific representation of interests or institution for RES, nor specific incentive measures (as on the national scale). The issue of RES, though only to a small extent, is integrated into existing international institutions, among others into those having primarily contributed to the establishing and diffusion of the conventional energy system. Important organisations involved in the diffusion of the conventional energy system are the International Energy Agency (IEA), the International Atomic Energy Agency (IAEA), as well as international financing institutions such as the World Bank, which in the past years has invested primarily high sums in (conventional) energy systems in developing countries. In comparison, the financial commitment to RES is very low: In the year 2004, the World Bank spent 0,7 % of the total credit amount on RES and efficiency. This corresponds to 14% in relation to the expenses on the energy sector. On the Renewables 2004 in Bonn, the World Bank had announced an annual increase of 20% of the RES expenses (The World Bank Group 2004a und b).¹²

Similar facts apply to the IEA, which originally was founded as a reaction to the oil crises and was meant to guarantee the supply of energy resources, while today it also deals with RES and efficiency. This shall be discussed in more detail at a later point in this paper. Finally, the International Atomic Agency explicitly deals with the diffusion of the “peaceful employment of atomic energy”, meaning nuclear power plants. The activities of the mentioned institutions de facto involved the securing of selling markets for the businesses of the developed nations; in the case of atomic technique this was the case even when no more plants could be built in the home country (e.g. Siemens in Germany).

3 International institutionalisation within the RES sector – discussions and developments

The international institutionalisation in order to promote RES can take different shapes and degrees. Its different shapes may range from an international agreement of binding or voluntary nature to a loose network, an affiliated or even influential and independent organisation.

The choice depends on the tasks and aims such an institutionalisation should be able to cover. The following aspects are being discussed:

¹¹ There are overlappings e.g. on the level of engineering industry, since the producers of wind energy are already an important group within the concerned association VDMA. Another example are the new (eco-) power suppliers which plead for a fair network access in accordance with the liberalisation. The ecological power supplier Lichtblick represents an active advocate for more competition next to conventional power suppliers such as Yello.

¹² Acting on the assumption of one half of RES being used, i.e. 0,35% of the overall volume of the World Bank, an increase of 20% after 4 years would mean a doubling to 0,7%.

- Global/international target setting and measures as well as control of target achievement
- Transfer of knowledge, counselling and education – regarding research, application and political instruments (including public relations for best practise etc.)
- Transfer of technology and cooperation of development aid (including financing mechanisms)

A study about the international institutional frame conditions of the promotion of RES carried out on behalf of the German Ministry of Environment (and responsible for RES) has examined the activities of the currently internationally active organisations, networks etc. (Pfahl et al. 2004). The study showed that while many of the activities mentioned above are covered, there is still a lack of efficiency and synergy. Further, a deficiency analysis named the missing targets and structure, the lack of coordination and cooperation, as well as the missing clarity of programmes and activities for RES (since they are often related to other facts and targets of promotion). These deficiencies point toward the importance of coordination to improve efficiency and synergy development of the many different and isolated international and national activities.

What must be stressed concerning the discussion of possible forms of institutionalisation - besides the different “theoretical” possibilities, is the demand for the integration of RES into the Kyoto regime, stopping the individual promotion of RES - which is mainly to be heard from RES critics. This discussion has been initiated mainly by those companies affected by the introduction of the emission trade and their representatives.

In the following, the forms of institutionalisation which are being discussed currently and the actual references and examples shall be described briefly.

3.1 International treaties – the experiment of Johannesburg

In Johannesburg, the attempt of reaching an agreement on the UN-level with binding quantitative RES extension targets failed. The success of such a treaty would depend on the level of the targets and the possibilities of imposing sanctions. But since the failure in Johannesburg most probably mirrors similar multilateral and UN-wide attempts, this political path is unlikely to be chosen in the near future. Additionally, comparable treaties only dispose of small administrative bodies, which would not be able to fulfill the above mentioned tasks.

Another possibility would consist in the affiliation to existing and related treaties such as the UNFCCC and the Kyoto Protocol. RES are adequate measures for reducing emissions due to their CO₂-discharging effect; within the Kyoto Protocol, however, they economically compete with the efficiency measures of existing plants. An explicit change to not emitting plants is thus at present only possible in exceptional cases. Further, with the target of reducing emissions at the respectively (globally) cheapest place, neither a strategic establishment of RES markets, the satisfaction of the growing energy demand nor the now insufficient energy supply can be guaranteed. This means that only a more explicit supplementary agreement or protocol dealing with the extension of RES separately, i.e. primarily, should be envisaged. Such an agreement, however, seems as improbable within the context of the UNFCCC as was the case in Johannesburg.

As unlikely as a treaty concerning the promotion of RES on the global and UN-wide level respectively seems, the more reasonable and feasible seems a mutual agreement between few pioneer states, which would be open to future members. Steiner et al., in their back-

ground paper for the Renewables 2004, prefer a “non-binding code of conduct” which via broad distribution to many stakeholders would be able to develop a higher potential of integration and serve as a preliminary stage for later instruments. They explicitly speak against a multilateral contract in this phase due to the bad experiences made (Steiner et al. 2004: 9).

3.2 Independent institution - IRENA

The discussion about the foundation of an independent and exalted international organisation for RES is now already 25 years old. A first approach was ventured by Willy Brandt’s North-South report, which spoke in favour of an “international (UN-) institute of RES” already in 1980, such as was demanded by the developing countries on the UN conference of RES held in 1981 in Nairobi. At the time being, this idea was rejected on the grounds of existing UN institutions being able to cover these tasks (see Hein 2001 and Scheer 2003). The discussion was revived during the preparations of the conference of Johannesburg. In the year 2001 Eurosolar organised an impulse conference in order to found an international RES organisation, now called IRENA (International Renewable Energy Agency). The suggestion was even included into the German coalition arrangement of SPD and Bündnis90/Die Grünen, and in 2003 the promotion of such a foundation was affirmed by a resolution of the German Bundestag¹³ (Wortmann 2003 and Deutscher Bundestag 2002).

Those in favour of IRENA, however, acknowledge the fact that such an organisation is unlikely to be founded as an independent global and UN institution respectively right from the start; the same judgement applies as with the treaties. IRENA is meant to depart from a (possibly small) group of founders (pioneer states), while it is supposed to be open to expansion from the beginning. According to Scheer, IRENA is meant to be “a political medium for information, inspiration and consultation heading towards a global energy turnaround” (own translation, Scheer 2003: 2).

Indeed, the decision of the German Bundestag has not been enacted within the legislative period in the intended way, and on the international level, a compulsory discussion has neither taken place in Johannesburg nor within other political arenas. Eurosolar and the World Council for Renewable Energy WCRE (both strongly influenced by the lead figure Hermann Scheer) are among the most active proponents. Remarkably, not even the circle of the RES lobby is among the noticeable advocates of such an independent agency. In the so-called White Paper, e.g., an international strategy paper by the ISES (International Solar Energy Society), only the necessity for international research cooperation is mentioned, while any other activities or the necessity of institutionalisation are not being mentioned. On the other hand, the IEA talks about an international cooperation required for research and develop-

¹³ The decision of the Bundestag stresses the key role of RES concerning the “protection of the world climate and the environment, the protection of resources, the struggle against poverty in developing countries and the long-term security of supply“. The central task of IRENA should consist of “the promotion of the worldwide transfer of technology for the RES and the increase of energetic efficiency“. What is emphasized is the fact that “international promotion requires full concentration on the task by an *own governmental organisation*“, since the promotion of RES was no longer “merely a question of commercial energy supply“, “but in many cases one of autonomous energy use and the introduction of new technologies“. Another task consisted in the extension of basic knowledge in various occupational areas (Deutscher Bundestag 2003, own translations).

ment, but also for the mobilisation of capital appropriations, the development of markets and the exchange of experience – institutions or organisations able to fulfil these tasks, however, are not mentioned (IEA 2002).

According to those in favour of IRENA, the Renewables-conference should have taken a big step towards the foundation of this organisation. What has been created, though, is a species of network – and explicitly no new organisation.

3.3 The „Renewables“ network

The intergovernmental conference Renewables, held in Bonn in 2004, was initiated by the network JREC, founded in Johannesburg in 2002 (see above). The conference achieved several important results: as the first intergovernmental conference of international character, it met with a remarkable public response. Second, an action plan consisting of various measures was passed which includes very heterogeneous activities ranging from targets and incentive measures to concrete individual projects. This action plan is meant to be continued, as well as the compliance with the pronounced measures is to be controlled. Thirdly, a (new) network has finally been founded, which is now called REN21 and is supposed to be politically active as well.

The network REN21 refers to itself as a stakeholder network which is mainly being represented by a steering committee (SC) consisting of 32 participating individuals. Those individuals are acting for governments (from national to local), NGOs, IGOs, industry and financial institutions – precisely the USA, IEA, the World Bank and the United Arab Emirates are represented here. REN21 has a “bureau” (chairman and assistant chairman of the SC) and a secretariat provided by GTZ and UNEP in Paris. Thus, on a smaller scale, this network is comparable to those of larger organisations such as UNFCCC. On the foundation meeting of REN21 in Casablanca, however, the first point of the agreement explicitly said that REN21 “should create no new institution”.¹⁴ The network, though, wants to get involved with political processes such as CSD¹⁵, G8, UNFCCC etc. as the voice of RES. Further, it seeks to cover tasks such as transferring knowledge or calculate global statistic data.

The question of how far the network (on the basis of its financial and human resources) may be able to reach further coordination tasks and the question of what future developments and further institutionalisation may look like, remain unresolved at present. In case the tasks – and competence, financial means and finally, influence – of the network will increase in the future, the strict announcement of not wanting to found a new institution would turn out mere appeasement rhetoric and thus be positive for the proponents. If the means and competence, however, stay limited, no sensible coordination or significant influence will be possible and the critics of such a “weak” institutionalisation would be right.

In the near future, REN21 might also choose to associate with already existing networks such as REEEP, which was founded as a Public Private Partnership by Great Britain during the World Summit in Johannesburg, CURES (Citizens United for Renewable Energy and Sustainability), or the World Council for Renewable Energy (WCRE). Finally, either a further

¹⁴ See www.ren21.net/ren21/structure/secretariat.asp.

¹⁵ This is one of the main points in the face of the CSD topic energy in 2006 und 2007 (see also BMU 2005).

development might lead to an independent organisation, or REN21 could exist under the umbrella of an established organisation such as the already “co-financing” UNEP. The latter possibility of associating with an existing organisation shall finally be explained briefly.

3.4 Integration into existing organisations

RES are already represented in various organisations, i.e. are addressed and promoted within those. That makes it seem plausible to create an individual division within any one of these organisations sharing special characteristics with RES, while the existing structures might be used at the same time. On the basis of the existing cross-national organisations, Pfahl et al. distinguish between the following possibilities of such an association in their study carried out on behalf of the BMU (Pfahl et al. 2004: 23 und 58ff): On the one hand, there are several organisations within the UN system (such as UNIDO, UNESCO, FAO, WHO, IAEA etc.), as well as those not encompassing the range of the UN such as the OECD and IEA, but also GEF. Programmes such as UNEP and UNDP, commissions such as CSD and also UNFCCC are referred to as UN supplementary agencies.

In their study, Pfahl et al. come to the following conclusion regarding the integration into or association with an existing organisation: “None of these organisations seems adequate as coordinating institution, since this would require a hardly realisable and fairly unpromising thematic re-orientation. They might, however, be able to cure some of the identified deficiencies of the international promotion of RES by adjusting their area of operations.” (own translation, Pfahl et al. 2004: 61). In this regard, Steiner et al. emphasize: „No international agency identifies wholeheartedly with the issue of global sustainable energy (in particular energy conservation, energy efficiency, renewable and climate-friendly energy) and focuses on it – in terms of agenda setting, initiatives for international negotiation of principles, rules and standards, setting up a global, authoritative and expert stakeholder consultation process and relationship-building with all relevant actors, including the private sector. Renewable energy does not have an “international home” at present.” (Steiner et al. 2004: 6). An association with an existing organisation is probably not only related to target conflicts within the whole organisation (e.g. concerning different contents, strategies or financial means within support programmes), but also appears limited from the start with regard to financing and human resources.

4 Categories and dynamics of international institutionalisation processes

The creation of institutions on the global and international level respectively, i.e. the establishment of such structures as are represented by organisations, agreements or voluntary initiatives, may not be traced back to a consistent pattern. They have all have been caused due to various reasons and have developed differently.¹⁶

¹⁶ The questions posed here are also discussed by regime or global governance researchers; the approaches differ analytically, theoretically or normatively (for an update, see Petschow et al. 2005). It might be worthwhile assessing all these different approaches with regard to the existing question; we state an urgent need for research here. In this paper, we are confined to the sources and authors mentioned in the following.

The “Social Learning Group“ (2001) has analysed different environmental regimes and their developments and thus basically identified strong and soft agreements. Especially those learning processes adding to the precise regimes and their institutionalisation have been focussed upon in the analyses. Braithwaite and Drahos (2000) also studied the dynamics of the processes and levels of institutionalisation of such agreements, though they did not only focus on environmental regimes.

In the following, the results of these studies shall be depicted. Then, an example each will be given for a soft and a strong agreement regarding the ozone problem. The International Energy Agency IEA shall finally serve as a further example of specific relevance to the context discussed in this paper.

4.1 Typing international environmental agreements: soft and strong¹⁷

According to the analysis of environmental regimes, two groups of international agreements can be distinguished: “soft agreements” and “strong agreements”. *Soft agreements* are characterised by the non-binding character of their fixed arrangements (i.e., a violation of these does not cause sanctions), by being reduced to a common denominator, and an orientation towards the highest number of members possible. For these reasons immediate results of soft agreements tend to appear limited, though the signatories commit to recognizing a problem as such and to continue working towards a solution. Learning processes usually take place during the preparation of the agreement: information is being exchanged and lobby activities are being initiated (by states, NGOs and researchers) in order to obtain a high number of participants. The first agreement in many cases merely sums up the learning process taken place by now. After signing the treaty (e.g. referred to as “framework convention”), further negotiations are initiated in order to enable a further development of the soft convention by the means of dialogue and persuading. Soft agreements are especially adequate whenever there is strong resistance on the one hand, while on the other hand the problem is not really controversial and disposes of a solid scientific foundation. The signatories of a framework convention recognize the problem without being directly forced to accept further duties. Hence, an approximation to the problem is possible and an increasing acceptance of the problem will follow.

Strong agreements, in contrast, are binding treaties which oblige the signatories to become actively involved in changing the situation. Though learning processes begin during the preparation period, the majority of the learning takes place during the realisation phase. Consequently, the number of participants of such agreements is much smaller, since many countries do not want to submit to measures concerning structure, or find themselves neither politically nor technically capable of realising such profound changes. In order to establish a strong treaty, there often is a need for “lead countries” that are able to realize changes, e.g. by developing a substitution for a problematic material, and thus pave the way for other interested countries. As an incentive, pioneer countries might enjoy first mover advantages such as thrusts of innovation, market leadership etc. In case an influential veto coalition exists, the success of strong agreements is limited, since a minimum number of participants is required in order to be able to achieve reasonable results.

¹⁷ This paragraph is based on Braithwaite/Drahos (2000); The Social Learning Group (2001) and Zürn (1998).

Figure 1: soft and strong agreements – development schemes

Model 1: soft agreements

preparations ⇒ *learning process* ⇒ **soft agreement** ⇒ *learning process* ⇒ accentuations

Model 2: strong agreements

preparations ⇒ **strong agreement** ⇒ *learning process* ⇒ new entries ⇒ *learning process*

Source: own illustration

When they arrive at international agreements, the role of the actors differs according to their structures and the problem. During the negotiations, the attitude of the nations is strongly influenced by potential economical consequences. Due to learning processes (of cognitive as well as of technological nature) and continuous improvements, even soft agreements can become successful regulators or function as a pre-stage for strong agreements. It is crucial here that the problem remains on the agenda and serves as a guideline, even beyond concrete regulations. Such dynamic aspects related to foundation and development shall be discussed after the following example, which will deal with a soft agreement as well as with a strong agreement, the latter derived from the former.

4.2 The example of the ozone problem: the Vienna convention and the Montreal agreement¹⁸

The first time the destruction of the protecting ozone layer was discussed was during the debate of supersonic flights in the 1960s. At the time, however, the debate met only little response. Only when the scientists Molina and Rowland in 1974 discovered that CFC might actually contribute to the destruction of the ozone layer, the problem drew public and political attention. This was the case especially in the USA, where the NGOs (Non-Governmental Organisations), some politicians and states pleaded for immediate legal regulations. Outside the USA, however, the interest in the problem remained limited. Since it was no issue for the media, the discussion remained restricted to a circle of experts.

The USA finally acted as pioneer in developing measures against ozone-destroying materials. In 1975 already, the “US Climate Impact Assessment” programme was launched; in the same year, the first American company stopped using CFC in aerosols.¹⁹ The UNEP meeting of 1977 was the first intergovernmental meeting to discuss the international regulation of CFC. A “World Plan of Action to Protect the Ozone Layer” was agreed upon and the “Coordinating Committee on the Ozone layer (CCOL)” was summed into being.

In 1978 the USA, Norway, Sweden, Finland, Canada and Denmark launched the prohibition of the not essentially required use of CFC. Most nations shied away from this step, since

¹⁸ See also Haas 1992 and UNEP 2003.

¹⁹ The Ozone Amendment which was included in the Clean Air Act in 1977 was the main success of the environmental movement. The reason for CFC being regulated in the USA at such an early stage lies in the split of the national industry. Central actor DuPont saw a chance that CFC substitutes might turn out a lucrative business in the future. Consequently, such businesses as well as the NGOs were able to influence the EU and thus contribute to the success of the Montreal agreement (cf. Braithwaite/ Drahos 1999).

possible substitution technologies were either not yet ready for operation or brought unforeseen costs with them. In 1980, the EG as well launched a resolution and demanded the reduction of aerosol by 30%. Further, upper limits of production were discussed.

In 1985, the actors who were ready to get involved and were striving for a global agreement reached a first consent which was the Vienna Convention. As a framework convention it can be classified as a soft agreement. During the preparations for the Vienna Convention, Norway, Sweden and Finland handed in plans for a worldwide ban of CFC. Negotiations for the Vienna Convention faced great insecurities regarding two major aspects: First, the existence and the degree of the environmental damage, second, the likely costs of counteractive measures. Nevertheless, the Vienna Convention became the first environmental agreement to make an environmental risk a global issue. It appealed for the formation of research groups and the exchange of information. Due to the lack of disposable and ready-to-use technologies, it was recorded in the contract that “adequate” measures should be taken (without those being further specified) and that further negotiations would be entered into as soon as new scientific results would enable these. Changes of the Convention could be decided by a 2/3 majority, which also applied to amendments. Thus the life span and flexibility of the convention were increased significantly. At the beginning it was only binding for those nations ratifying the amendment. However, all the nations who became members at a later stage were obliged to accept the whole contract. The already existing partial national ban of CFC in the USA caused regional companies (especially market leader DuPont) to develop a strong interest in a unitary global government, in order not to suffer disadvantages within the international competition from the more expensive substitution products. This motivation played a key role during the further process of institutionalisation.

In 1987, negotiations regarding the Montreal Protocol took place. Concrete and binding target settings concerning consumption and production were fixed here, which also became binding for those nations who had voted against them, on the grounds that the convention had decided accordingly. Consequently, the Montreal agreement can be characterised as a strong agreement.²⁰

In the following years, the Montreal agreement has been revised and aggravated several times according to new scientific results. The reduction periods were shortened severely and new substances were added to the protocol. In 1991, a multilateral fund was raised in order to support to developing countries financially when enacting the Montreal agreement.

Businesses cooperating with NGOs play a key role concerning the ozone problem. The precursory role of the USA mainly achieved by NGO lobbying has created incentives for domestic enterprises to become active themselves and stand up for globally effective standards. This development also provided the NGOs with opportunities, since they gained influence via partnerships with businesses. The mutual instrumentalisation encouraged both in their differently motivated pursuit of stricter rules. Besides the USA, the Scandinavian countries enjoyed great assertiveness, since they lend their reputation to environmental protection.

²⁰ The agreement itself obliges the signing governments to regulate the consumption and production of CFC, to freeze it on the level of 1986 until the year 1990, to reduce it by 20% until 1993, and to achieve a reduction by 50% until the year 2000. In the case of Halons, the convention resolves to keep the level of 1986 until 2005. Developing countries enjoy a ten year period of connexion.

4.3 Dynamics for the implementation of national and international regulations²¹

The following questions are relevant to the analysis of the actor-related dynamics and learning processes leading to the preparation and development of agreements: Who names the problem and how does it reach the political agenda? How is the problem established on the international agenda? How does institutionalisation finally work and what does it look like precisely?

The first questions deal with the important and central issue of the problem, which firstly needs to be existing and relevant, secondly accepted and understood on a broad basis (common sense of problem), and thirdly it needs sufficient influential promoters. The right timing for the setting of an agenda also seems to play an important part.²² Furthermore, acknowledging a problem seems much easier regarding a large-scale catastrophe than regarding stealthy changes such as climate change, e.g..

It is a long and dynamic process (cf. the example of ozone) until a problem, its perception and discussions about solutions finally turn into a regime or institutionalisation process. Partly owing to the long time frames, during this development the priorities of international agendas, promoters or other circumstances are subject to change and so an interruption, stagnation or progression (e.g. from a soft to a strong agreement) may take place.

In the following, an extract of a systematisation of the initiation dynamics of environmental regulations and their diffusion shall be sketched. This approximation is based on Braithwaite and Drahos (2000). The diagrams describe a relevant range of decisive factors and schemes of international institutionalisation.

The first two examples of international regulation dynamics point to the fact that initiatives for environmental regulations may have different sources. For a typing of the initiatives and dynamics we will distinguish between top-down and bottom-up approaches.

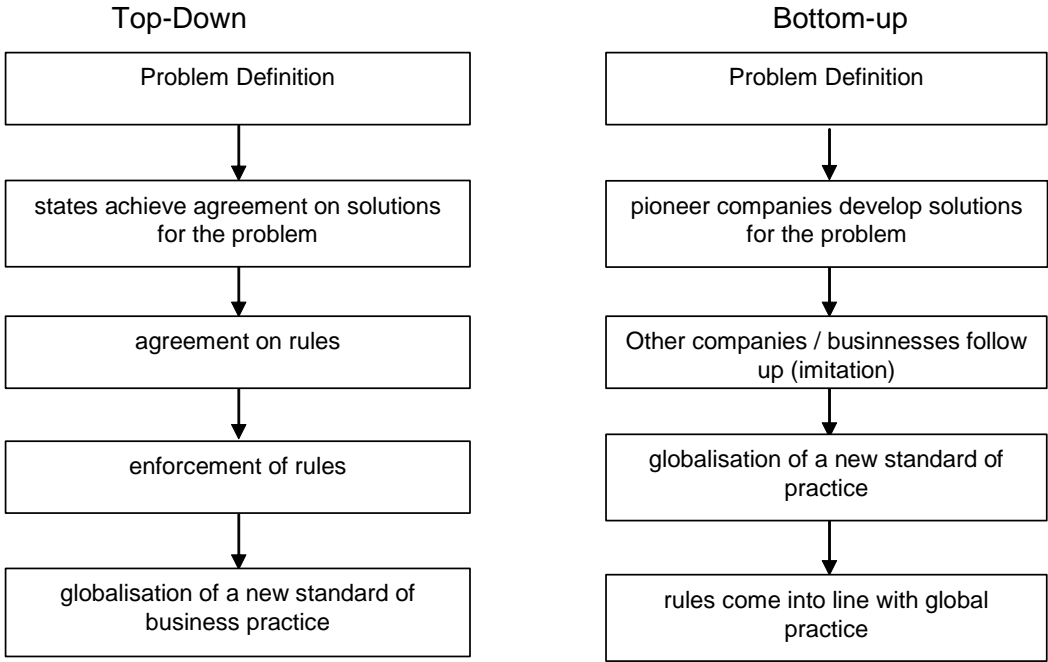
The left side of the chart shows the usually assumed dynamic, according to which *nations* identify and define an *environmental problem* and consequently develop a basic understanding of the problem as well as possible solutions and then place it on the international agenda. Hence, *regulations* start to change the *entrepreneurial practice*. This model springs from a hierarchical understanding which assumes that the state is aware of the problems and converts its interests in corresponding steering mechanisms.

A second path is orientated towards bottom-up processes. An environmental problem is on the agenda; *pioneer businesses* incorporate it and develop technical and/or social *innovations*. These innovations prove fit for diffusion, i.e. other businesses adhere to these new standards and adapt them without an international regulation, e.g. in the form of an agreement, taking place. This variant then is mainly market-driven.

²¹ This paragraph is mainly based on Braithwaite and Drahos (2000).

²² Also called window of opportunity, recently discussed within the context of political time strategies (see Nill 2004).

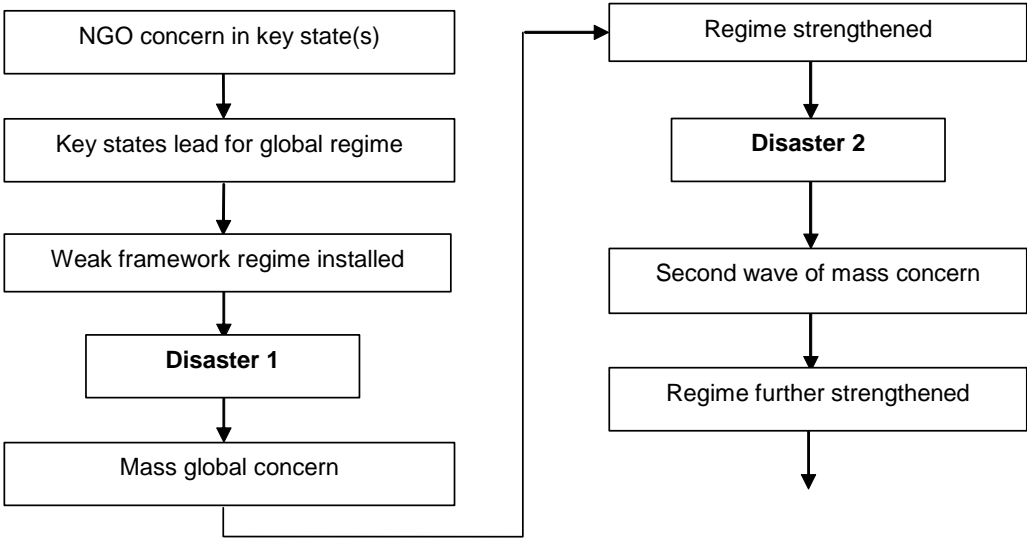
Figure 2: Origin and realisation of regulations: Top-down vs. bottom-up approach



Source: Braithwaite / Drahos (2000)

Another example deals with the problem of limited awareness of the problem as it occurs when a problem is only represented by individual stakeholders, and catastrophes or other events are necessary in order to have political actors acknowledge it. It is a common pattern that first, scientists identify an environmental problem and provide solution approaches, and then the problem is set on the *national political agenda* by environmental organisations and the aid of the media. *Pioneer states* adapt the problem and intend to set it on the international agenda. An approximately similar view of the problem can be achieved, but a further consensus on advanced measures is still lacking. In the given example, the further development of the agreements depends on *accidents or central events*, which then can be communicated via the mass media and increase the pressure for action.

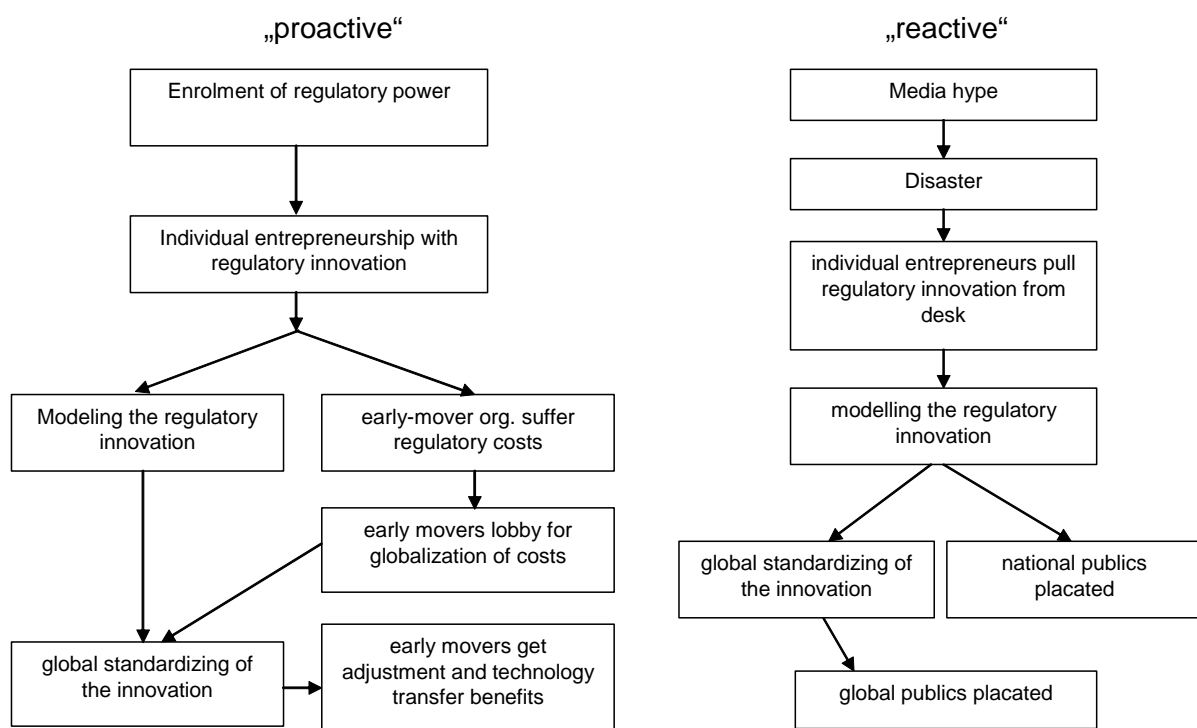
Figure 3: more complex development scheme of an international regulation



Source: Braithwaite / Drahos (2000)

The last two examples are based on the interaction of the above depicted models, especially the interaction between state and economy. In one case, the focus lies upon the reactions of the businesses behaving *pro-actively*, while the feasibility of a regulatory approach later to be realized on the national scale is depicted by social and technical innovations. Such a national regulation may then serve as model for other nations (within the RES context the German renewable energy act could be mentioned). Due to the involvement into the world market, the companies in the precursor nations may suffer from competitive disadvantages as a consequence of restrictive rules. These companies usually are interested in developing an international level playing field, which means that regulations will be enforced internationally. If this is the case, the businesses will usually benefit from competitive advantages, last but not least because of the learning experience with technical or social innovations and a first-mover-advantage.

Figure 4: Developments of regulation: proactive and reactive



Source: Braithwaite / Drahos (2000)

The *reactive* approach assumes that a given disaster will be transported by a corresponding response in the media and thus create pressure for action. Since at the time being it is still unclear how the problem might be dealt with, there is a time slot where those solutions are brought to bear which otherwise would not have had any chance of being realised. A solution offered at the right time, i.e. when great insecurity of how to deal with the problem prevails, might be able to influence the perception of the problem in such a way that this solution will have to be accepted first nationally and then internationally, too.

4.4 The example of the IEA

The foundation of the IEA is an example of international institutionalisation within the energy sector, which is why this example is of particular importance to RES: on the one hand, it may

serve as a role model concerning comparable developments, on the other hand, the global promotion of RES within the IEA is being discussed too (see above).²³

The foundation of the IEA closely followed a considerable change of energy sources in the developed nations (coal being substituted by oil) as well as an accompanying strengthening of the OPEC. Consequently, the developed nations became dependent on oil and were confronted with the cartel among suppliers of the OPEC. While the related problems (dependency on prices and availability, e.g.) were mentioned, the early warnings were hardly listened to, since no imminent crises were visible and the developed countries were hardly inclined to cooperate. At the time being, cooperation within the OECD was primarily limited to the exchange of information.

Against this background, the development process until the foundation of the IEA might be characterised and typed in the following manner:

- The oil crisis emerges²⁴
- An important actor (USA) takes over the lead and delivers suggestions of solution and institutionalisation
- The involved nations position themselves
- Influential nations agree upon the form of institutionalisation (soft or strong form, new foundation of an institution or association with an existing organisation etc.), the modes of voting and duties
- Hesitating states spare themselves an option
- The IEA is founded with the participation of important states from the OECD world, later entries follow (at the moment: 26 developed countries, additionally the European Commission)
- The main targets and tasks derived mainly from the crisis and were concerned primarily with securing the energy and oil supply, but also with developing alternatives.

The decisive factor for the quick foundation of the IEA proves to be the dimension of the oil crisis and the resulting need for action. Since during the pre-phase of the foreseeable crisis there was no willingness to cooperate or to create a specific organisation, the crisis provided the catalyst for the institutionalisation.

The IEA describes itself as „energy forum for 26 industrialised countries“²⁵, while the prime target is described as following: „IEA Member governments are committed to taking joint measures to meet oil supply emergencies.“ (IEA n.d.: 4). Other issues are reduction of costs and search for alternatives to the dependency on oil. The „Shared Goals“ of the IEA which

²³ This paragraph is largely based on the source Scott 1994.

²⁴ Quotation from the self-presentation of the IEA which emphasises its primary target setting: “The oil crisis of 1973-74 literally shocked the nations of the industrial world into taking action to ensure that they would never again be so vulnerable to a major disruption in oil supplies.”

²⁵ In the web presentation of the IEA this is expressed more clearly: The IEA is “an intergovernmental body committed to advancing security of energy supply, economic growth and environmental sustainability through energy policy co-operation” (www.iea.org)

were released by the energy ministers of the IEA member states on a meeting on 4th July 1993 in Paris, denote as crucial aspect: “Diversity, efficiency and flexibility within the energy sector are basic conditions for longer-term energy security: the fuels used within and across sectors and the sources of those fuels should be as diverse as practicable.” This statement is further specified regarding the use of non-fossil sources, i.e. also renewable energies. At the same time, however, the technical-infrastructure rootage of the IEA in large-scale plant structures is revealed: „Non-fossil fuels, particularly nuclear and hydro power, make a substantial contribution to the energy supply diversity of IEA countries as a group.” (IEA o.J.: 5). According to these main tasks of securing the oil supply and (further) development and diffusion of large-scale plants for energy supply, the IEA has specialised and established itself over the past years. This is confirmed by the conclusion in 3.4, that an integration of an independent global RES initiative into the IEA (in this case) must be regarded as neither appropriate nor target-oriented.

5 Synopsis and preliminary conclusion

The above analyses of the developments of various international regimes and agreements (especially environmental agreements) allow deducting basic factors of influence which are important during the foundation of soft and strong institutionalisations of various degrees. In order to generate international institutionalisation processes on the basis of an existing problem (e.g. the human induced ozone hole, forest dieback, climate change, or the global necessity for amplified promotion of renewable energies), several factors are required. Among these are

- the exertion of influence with publicity effect by lobbies such as environmental organisations,
- scientifically accepted recognition of the problem based on fact,
- clarification of the problem by/through catastrophes or single events of attention getting value
- interest and target-oriented operation of pioneering states²⁶,
- the existence of (socio-technical) methods of resolution,
- interested businesses or NGOs pushing the subject.

These factors either describe sequential processes (in various orders) or events developing parallel. The resulting form and degree of institutionalisation depends on the intensity of individual factors as well as on their cumulative effect, i.e. to which extent factors complement and support one other.

²⁶ The acting of pioneer states distinguishes between two cases. On the one hand, there are countries which are able to accomplish such decisions and institutionalisation due to their influence regarding particular areas or their general (regional or global) hegemonic position (top-down). On the other hand, there are those pioneer states which are less influential, yet represent lead markets (or intend to become such) due to economic advantages, e.g. Thus, they are able to accelerate international institutionalisation, depending on the form of institutionalisation (either by imitators or entries, see also bottom-up strategy) (cf. Young 1991).

It is now possible to apply the simplified scheme of the influencing factors of international institutionalisation processes to the aforementioned examples and compare it to the existing as well as potential developments within the RES. This leads to some general statements about an international institutionalisation strategy for RES.

The following figure reflects the above mentioned factors and evaluates them on a qualitative basis referring to the examples of the Montreal agreement and the IEA. This evaluation serves as a comparison of the current developments of the international institutionalisation process of RES.

Figure 5: Factors of influence of international institutionalisation processes and evaluation

Influencing factors of international institutionalisation	Specification	Montreal (Vienna Convention)	IEA	RES - Preliminary evaluation
Exertion of influence with publicity effect by lobbies such as environmental organisations, e.g. Scientifically accepted recognition of the problem based on fact		+	-	0
Clarification of the problem by catastrophes or events of attention getting value		+	++	0
Interest and target-oriented operation of pioneering states	Pioneer states with a strong influence on the global community (top-down)	(+) ++	++	
	Pioneer states with little influence on the global community (but: imitation effects, bottom-up)			+
Existence of (socio-technical) methods of resolution pushed by interested businesses or NGOs		(+) ++	+	+
		(+) ++	unknown	0

Legend of evaluation marks: - of little/no significance; 0 neutral/ undecided effect; + positive effect; ++ very positive effect

Source: own graphic

The ozone problem shows a positive coherence of all factors which finally led to the Vienna Convention (see assessment in brackets), with the help of the activities of the pushing actors (researchers, NGOs, US Businesses and government, others). Over the years these factors grew stronger, especially owing to the amplification of the active nations, the extension of economic interests and the development of further technical solutions, a strong agreement was decided upon.

The case of the foundation of the IEA is different. It was basically the oil crisis and the wish of the influential OECD nations to react quickly and “institutional” to such a crisis, which led to the strong agreement. Looking back, we do not assume that the quick and target oriented action was the direct result of public or economic influence, either.²⁷

Both examples together demonstrate how the interest and target oriented action of nations (pioneers) at least “formally” represents a necessary condition for a successful institutionalisation process. Nevertheless, the remaining factors should not be underestimated, since the influence of the non-governmental actors (also those in the background) and the media proves to be decisive for governmental actions on the international stage (cf. Cutler et al. 1999, Higgott et al. 2000, Vogel et al. 2002).

Looking at these examples and their assessment, the situation of RES might be described as follows:

²⁷ Certainly, both factors are relevant, though the initiative of the nations can be considered as comparably independent in this case.

1. Besides the demand for an IRENA, as it is supported by the former red-green government and individual RES actors, there are few clustered and influential activities heading in that direction. Not even the RES lobby and bigger RES companies seem much concerned with the matter. At the moment, the foundation of REN21 as a consequence of the Renewables conference seems to be the only international process of institutionalisation. This soft agreement of not yet binding character already exerts a certain influence, though binding targets are not being set. The network could also cover the important task of coordinating the diverse RES activities of various international organisations (see above); however, a powerful position on the global political stage as international RES advocate is not likely to be obtained by the network.
2. An important barrier for a stronger degree of institutionalisation is the fact that the lacking promotion of RES is not treated as an independent problem. On the contrary, RES are regarded as one among several solutions within the “superordinate” problem of climate change. This finally leads to the negative or neutral evaluation of several factors in the above diagram, since the complexity of climate change and the competition of solutions (large-scale technique vs. de-centralized solutions, atomic energy vs. RES etc.) cause a lack of a „critical mass“ of supporting factors. The various catastrophes of the past years related to climate change might thus not have exerted sufficient influence yet while the public debate about consequences does not directly lead towards an increasing development of RES. Further, the competing technologies (based on fossil and nuclear fuel) benefit from considerably stronger actors and lobbies.²⁸
3. The two positive assessments in the diagram represent RE technologies as such which are already technically advanced and have undergone far-reaching learning curves. Moreover, it is relatively “low tech“ in comparison with nuclear technique, e.g.. The second positive assessment represents the current activities of the pioneer states, especially Germany who as one of the most important actors initiated the Renewables conference and the follow-up network, last but not least in order to strengthen its own market position. In this connexion the attempts of the red-green government to diffuse the success model EEG internationally can be noted. In spite of having announced it in the coalition contract, the federal government has so far avoided the initiation of an IRENA. For countries without any lead market ambitions the pressure for institutionalisation of problems currently does not seem to suffice or exist at all.

What conclusions may be drawn for a future development of the international institutionalisation of RES? Which factors seem likely to play a part in such a process?

- What comes first is the least pleasant variant, because experience shows that wider and *greater crises* might accelerate the dynamics of international institutionalisation. These, however, will only be to the advantage of RES if, at the same time, competing technologies such as atomic energy are negatively affected .
- Without this sort of catastrophe, RES will only be able to remain on the international agenda if they become somewhat thematically emancipated and thus differ from the competition and decision trap of other climate protection measures. Such a *thematic*

²⁸ The IEA and IAEA, as well as all the nationally and internationally active lobbies and the global players from energy and fuel industry deserve to be mentioned here.

emancipation could also be caused by highlighting the various uses of RES, e.g. its dynamic economic effects or the connexion of RES and sustainability. This is where the need for research becomes evident that could enable the consolidation of positive effects.

- Further, an *increased commitment of important actors* is required. Without the support of many (important) businesses and NGOs, political action heading towards a stronger institutionalisation of the problem is unlikely to accelerate.
- Finally, *pioneer states* such as the Federal Republic of Germany could carry out a stronger institutionalisation or the foundation of an IRENA respectively, i.e., if they are able to come up with sufficient partners and financial means.
- Costs seem a central reason for not having realised this until today. *Innovative financing models* might prove helpful, including e.g. the profiting private businesses, without abandoning the “public” tasks of such an institution.
- It seems conceivable that pioneer states set a common, more binding agreement (including concrete targets etc.) open to additional members; but pressure for action and a critical compound of demanding organisations are also missing at the moment.

This analysis leads to the conclusion that the foundation of an IRENA or an internationally binding target setting seems unlikely at present. In this connexion, a thematic emancipation of RES from the climate discourse, a further support of international institutionalisation from within the range of important RES actors and finally, a gathering of pioneer states that organise the precise process could aid the process. The current strategy of practising a network-like association will not prove sufficient in the sense of a sustainable energy politics. Nevertheless, it mirrors the still limited role and influence of RES. The network might represent a first important step from soft to strong institutionalisation, provided that it proves internationally successful in fulfilling its coordination and information tasks.

6 Bibliography

- BMU [Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit] (2005): Johannesburg – Bonn – Peking. Hintergrundinformation zur Beijing International Renewable Energy Conference (BIREC 2005). http://www.bmu.de/files/erneuerbare_energien/downloads/application/pdf/peking.pdf. Zugriffsdatum: 4.11.2005
- BMU [Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit] (Hrsg.) (2005b): Erneuerbare Energien in Zahlen - Nationale und Internationale Entwicklung; Paderborn.
- Braithwaite, J., Drahos P. (2000): Global Business Regulation, Cambridge University Press
- Cutler, C., Haufler, V. Porter, T. (eds.) (1999): Private Authority and International Affairs. New York.
- Deutscher Bundestag (2003): Initiative zur Gründung einer Internationalen Agentur zur Förderung der Erneuerbaren Energien (International Renewable Energy Agency – IRENA); Drucksache 15/811, Berlin.
- EC [European Commission] (2003): External Costs: Research results on socio-environmental damages due to electricity and transport); EUR 20198, <http://www.externe.info/externpr.pdf>

- EC [European Commission] (2004): Communication to the Council and Parliament. The share of renewable energy in the EU. 26.05.04 (COM(2004) 366 final). http://europa.eu.int/comm/energy/res/legislation/share_res_eu_en.htm; Zugriffsdatum: 25.07.2005
- EU 2001: Directive 2001/77/EG of the European Parliament and of the Council of 27 september 2001 on the promotion of electricity produced from renewable energy sources in the internal electricity market; see: http://europa.eu.int/eur-lex/pri/en/oj/dat/2001/l_283/l_28320011027en00330040.pdf
- Haas, Peter M. (1992): Banning CFC - Epistemic Community Efforts to Protect Stratospheric Ozone. In: International Organization 46, no. 1 (1992): 187-224
- Hein, Wolfgang (2001): Die Aktivitäten der Vereinten Nationen für Erneuerbare Energien in den neunziger Jahren. In: Solarzeitalter; Nr. 2/2001; S. 25-27.
- Higgott, R. A. et al. (ed.) (2000): Non-State Actors and Authority in the Global System. Routledge. London
- Hirschl, Bernd/ Brunnengräber, Achim (2003): Strukturen für Erneuerbare. In: punkt.um, Nr. 4/2003; S. 21
- IEA (2003): Renewable Energies ... into the Mainstream. Renewable Energy Working Party (http://www.iea.org/textbase/nppdf/free/2000/Renew_main2003.pdf)
- IEA o.J.: International Energy Agency IEA – an Overview. <http://www.iea.org/Textbase/about/Overview.pdf>, Zugriffsdatum: 2.11.2005
- Karekezi, Stephen; Lata, Kusum; Suani Teixeira Coelho (2004): Traditional Biomass Energy – Improving its Use and Moving to Modern Energy Use; Thematic Background Paper to the International Conference for Renewable Energies; Bonn.
- Nill, Jan (2004): Time Strategies of Transitions and the Transformed Role of Subsidies as Environmental Innovation Policy Instrument; In: K. Jacob; M. Binder; A. Wieczorek (Hrsg.): Governance for Industrial Transformation. Proceedings of the 2003 Berlin Conference on the Human Dimensions of Global Environmental Change. FFU-report 03-2004, Berlin; 295-307.
- Oberthür, Sebastian; Pfahl, Stefanie; Tänzler, Dennis (2004): Die internationale Zusammenarbeit zur Förderung Erneuerbarer Energien; in: Aus Politik und Zeitgeschichte, B 37/2004, Beilage zur Wochenzeitung Das Parlament, 6. September 2004; 6-11.
- Petschow, U.; E.U. v. Weizsäcker, J. Rosenau (Eds.) (2005): Governance and Sustainability. Greenleaf
- Pfahl, Stefanie; Oberthür, Sebastian; Tänzler, Dennis; Kahlenborn, Walter; Biermann, Frank (2004): Die internationalen institutionellen Rahmenbedingungen zur Förderung erneuerbarer Energien. Studie im Auftrag des Bundesministeriums für Umwelt, Naturschutz und Reaktorsicherheit; http://www.bmu.bund.de/files/erneuerbare_energien/downloads/application/pdf/broschuere_globale_ausbau_ee.pdf
- Reiche, Danyel (2005): Rahmenbedingungen für erneuerbare Energien in Deutschland; Frankfurt a.M.

- RWE (Rheinisch-Westfälisches Elektrizitätswerk) (2004): World Energy Report 2004; Opportunities and Risks of Future World Energy Supply - Focus: The security of supply on competitive energy markets; Essen.
- Scheer, Hermann (2003): Das Weltprojekt der IRENA im Spannungsfeld zwischen politischem Uni- und Multilateralismus. In: Solarzeitalter; Nr. 2/2003; S. 2-4.
- Scheer, Hermann (2005): Energieautonomie. Eine neue Politik für erneuerbare Energien; München.
- Scott, Richard (1994): IEA The first 20 Years. Volume I: Origin and Structure; Volume II: Major Politics and Actions; Volume III: Principle Documents.
- Steiner, Achim / Wälde, Thomas / Bradbrook, Adrian (2004): International Institutional Arrangements. Bundling the Forces – but how? Thematic Background Paper für die Regierungskonferenz Renewables 2004 in Bonn, <http://www.renewables2004.de/pdf/tbp/TBP09-institutions.pdf>, Zugriffsdatum: 3.11.2005
- The Social Learning Group (2001): Learning to Manage Global Environmental Risks. Cambridge
- UNEP, Ozone Secretariat (2003): Handbook for the International Treaties for the Protection of the Ozone Layer. The Vienna Convention (1985). The Montreal Protocol (1987). Sixth Edition. Nairobi: UNEP
- Vogel, D., and R.A. Kagan (2002): National Regulations in a Global Economy. In D. Vogel and R.A. Kagan (eds.), Dynamics of Regulatory Change: How Globalization Affects National Regulatory Policies.
- Wortmann, David (2003): Erneuerung der internationalen Energiepolitik. Die Internationale Agentur für erneuerbare Energien (IRENA) und die Internationale Konferenz für Erneuerbare Energien – Entwicklung und Stand der Dinge. In: Solarzeitalter; Nr. 1/2003; S. 14-16.
- Young, Oran R. (1991): Political Leadership and Regime Formation: On the Development of Institutions in International Society; In: International Organisation, Vol 45, 281-308.
- Zürn, M. (1998): Regieren jenseits des Nationalstaates; Frankfurt/Main.