# Governance in Global Policy Networks
# Individual Strategies and Collective Action in Five Sustainable Energy-Related Type-II-Partnerships

## Short Summary

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As long as there is no effective international climate and energy regime, voluntary cooperation might pave the way to an international agreement, and spur collective action even after an international agreement could already be reached. Thus, global policy networks of voluntarily committed actors might work as an enabling condition in the process of an international regime, not as an alternative to a regime. Research must elicit if and under which circumstances global policy networks achieve to establish effective network governance on global issues. Networks help to develop individual solutions for failures to generate sustainable outcomes, and to disseminate model solutions developed by individual partners, by providing flexible mechanisms to collect resources and connect partners for effective action. Thereby, networks scale up sustainable solutions. Hence, networks can work as a leveraging instrument, which, however, can reach maximal effectiveness only as complementary mechanism to an international regime.

*Relevance*

As a matter of fact, energy cannot be substituted and will continue to be necessary for all physical activities of all sectors of social and economic development. The hunger for energy of the biggest economies in transition has driven the oil price from one peak to another. The price of gas has followed. The dangers and future costs of nuclear energy are uncertain and hard to calculate, but will certainly impose burdens on future generations, and represent a high risk technology in times of international terrorism. After all, availability of these energy sources will decrease. The costs of their exploitation as well as of their external effects on the global climate, for instance, will go up. Today's energy economy is therefore "compromising the ability of future generations to meet their own needs", [Brundtland-Report 'World Commission on Environment and Development': Our Common Future. Oxford New York: Oxford University Press, 1987] thereby violating the definition of sustainable development as defined by the World Commission on Environment and Development. Thus, energy policies, traditionally a national issue, have entered the agenda of international policies, and energy policies must consider completely new questions.

In order to change the path of global development, the world needs leadership. However, without support in international cooperation and strategic alliances, leaders might be helpless. This situation calls for a **new governance model of global politics**, and particularly climate politics. One that is neither about setting incentive structures rightly and let the market rule, nor about empowering agencies to command and act, but it is about both: the process in which agencies and structures, organizations and markets develop global environmental governance. "Partnerships basically serve to connect the dynamism that we see at the local level with the commitments that Governments need to make. We need both. Not one or the other – both." [WSSD: Report of the World Summit on Sustainable Development, 2002]

Indeed, at the WSSD so-called Type II Partnerships of state and non-state actors were recognized as official conference outcomes. However, international governance based on networks cannot substitute for conventional intergovernmental negotiation and contract based governance. Both must play complementary roles. The more flexible forms of international collective action of partnerships or – in a broader sense – of global policy networks can

become the supplement to fixed international regimes. However, to come to efficient solutions, this global governance must not crowd out the self-organizing dynamics in markets producing spontaneous order.

*Background: Global Energy and Climate Governance*

Market failures signify a situation where self-organizing dynamics do not produce the outcomes, which are desirable from a societal viewpoint. Governmental regulation is supposed to overcome market failures and set up agencies to regulate the market, set right incentives, and design framework conditions for an effective and efficient sustainable development. These governmental interventions, however, fail sometimes, too, to produce better results. Government failures, as mirror image of market failures, are differentiated by Jänicke [Staatsversagen und Dezentralisierung. Erwägungen zu einer langfristigen Strategie des ökologisch-ökonomischen Umbaus. In: Blätter für deutsche und internationale Politik, 1991, 9 (September), p. 1053-1064, p. 1053] into political government failure, the lack of capacity to intervene, functional government failure, the ineffectiveness of interventions respectively the decision not to intervene, and economic government failure, the inefficient ratio of price and quality of the produced public good.

Governance through global policy networks on energy for sustainable development must address the according to Nicholas Stern "greatest and widest-ranging market failure ever seen", the climate change [Nicholas Stern: Stern Review: The Economics of Climate Change. Executive Summary, 2006, p. 1] by aiming to overcome the failures of energy markets to produce sustainable outcomes. Sustainability must be understood in a threefold sense of the term. Every sense again corresponds with two sorts of possible *market failures*.

(i) *Social sustainability* is infringed by *monopolists* in grid-industries using market power to raise prices above an efficient level, thereby excluding certain actors from access to certain goods and services, while investment costs for potential competitors are prohibitive. Another form of social exclusion results from *misallocated resources*, allowing certain groups to push through their vested interests while other actors are hardly able to meet their basic needs. Questions of social equity, redistribution, and safety nets touch on social sustainability, and in the context of energy markets, the provision of the poor with energy services for vitally necessary appliances to purify water, for cooking, heating, cooling vaccines and for lighting to prolong hours of labour and education after sunset.

(ii) *Environmental sustainability* bases on knowledge and a proper understanding of causal links between economic practices and natural environment are necessary to recognize those external effects, which are often uncertain or become effective only in the far future. Hence, the lack of environmental sustainability may be due to the simple fact that causal connections are not understood properly and to a *lack of information*. Particularly in developing countries such related capacities are simply missing. The switch to a sustainable energy system lacks knowledge and local human, technological, economic, and institutional capacities to adequately address global environmental issues. Due to this lack of local capacities *transaction costs are prohibitive*.

(iii) *Economic sustainability* must internalize all costs of practices. However, energy economics usually imply several negative *external effects*, while positive external effects like a stable climate can be enjoyed by free riders not contributing to the financing of necessary economic changes and changes in energy systems. Besides of external effects, *long-term effects* are not included in market prices, too, and, therefore, cause overinvestment in what is detrimental to the society, or underinvestment in technologies, products, or industrial practices, desirable from a societal point of view. For, certain investments are only profitable in the long-term and thus beyond the time horizon of private actors.

Usually, governmental interventions and regulations aim to set up macroeconomic regimes to overcome the different market failures. In the global context of climate issues, however, intergovernmental negotiations have not been successful so far to establish an effective international climate and energy regime. That's where more flexible, voluntary, decentralized, participative, innovative, and cooperative global policy networks and partnerships must support the international process overcoming market failures and organizing sustainable development. The **top-runner** approach will be briefly discussed as supplement to network governance and mechanism to erect an effective international regime.
The top-runner approach defines successively the most sustainable practice or technology of an industry leader and the related the degree of CO2-efficiency of production of the industry leader as the standard for the whole industry. Developed countries can then ambitiously engage for climate change mitigation and reduce greenhouse gas emissions while at the same time avoid setting too ambitious standards or overtaxing their economies. The top-runner approach holds incentives to comply for developing countries as well. Foreign direct investments of global industry leaders in developing countries will become more likely as the companies can benefit from their lead in sustainable technology and practice and will not have to compete with companies undercutting prices with cheaper but dirty and hazardous technologies and practices. And in order to enjoy their first mover advantage from their lead in sustainable technologies and practices, the industry leaders must supply their top runner products and services in developing countries to force competitors to invest to catch up. Additionally, the compliance with an international climate regime creates out of the scarcity in emission rights investment opportunities for clean technologies.
The incentive for leaders to invest in sustainable technologies and practices is the competitive advantage they will enjoy and which a top runner program protects against social or environmental dumping prices. Thereby, a top runner program might incentivize a *race to the top*.

*Research Interest*
The ambition of this thesis is to analyze market failures and incentives of mutual benefits in network activities and integrate those with approaches to international politics and organizational theory, which then feed into strategies of **network governance**, i.e. both governance *in* global policy networks and governance of global issues *through* networks. This governance model must reflect the situation of the system of international relations where no superordinate authority can govern and yet interventions in global market failures are badly needed. The new governance model roots in **global policy networks** and their governance through *self-organizing dynamics* and *strategic management* interventions. Thereby, these networks promise to organize *knowledge* and *social capital* as managerial resources for action for sustainable development more effectively and efficiently.
The question is if global policy networks might be able to keep the promise of organizing effective global governance and global policies, and if yes how they achieve that. Therefore a *microeconomic, decentralized network governance strategy* how to deal with *macroeconomic failures* to produce sustainable outcomes is supposed to reflect the final outcome. In order to design a common network governance strategy, to be followed by autonomous network partners, on how to execute certain governance functions three aspects of global policy networks have to be analyzed: (i) the **effectiveness** of the governance functions of some given networks, (ii) the **efficiency** of the activities of these given networks, and (iii) the **success factors** for cooperation among the partners in these networks. Thereby effective mechanisms of governance *in* networks will be identified which define how to organize effective mechanisms of governance *through* networks on global issues.
The analysis will proceed according to **three phases** of network development and check what makes governance in and through networks in each of these three phases effective. The first

phase is the start-up when the governance of a network is designed. The second phase often correlates with a lack of funding forcing network partners to start reforming the network governance and network activities. Only in the third phase networks start to realize advantages compared to public regimes or private actors in markets.
In phase one, networks must establish a *process-related governance*. In phase two when networks become operational, they must strategically manage the *network resources* in order to address certain market failures. In phase three long-term developments of networks and how they organize *strategic management* to complement *self-organizing dynamics* to produce their outputs will be subject of analysis.
These requirements of three phases feed in three hypotheses on governance in networks. Additionally, six theses on governance through networks address six energy market failures which global policy networks help to overcome.

*Method of Analysis*
The theses on Governance through Networks will be tested on the cases of five sustainable energy related partnerships. Approximately 40 energy-related type II partnerships of different scope, regional focus, technology focus, and participating sectors were launched as outcome of the WSSD in 2002. Among those 40 partnerships three features separate the GVEP (Global Village Energy Partnership), EUEI (EU Energy Initiative for poverty eradication and sustainable development), GNESD (Global Network on Energy for Sustainable Development), and REEEP (Renewable Energy and Energy Efficiency Partnership) from all others. These networks are the only ones which aim to apply their activities *globally*, have set *technology-neutral* goals to increase access to sustainable energy for the poor, not regarding the particular purpose for energy use, and whose partners come from *all sectors* and *all world regions*. In 2004 another global policy network in the field of sustainable energy was founded at the renewables2004 – International Conference on Renewable Energies, Bonn, and finally launched one year after. This Renewable Energy Network for the 21st century (REN21) will be taken into account additionally as it meets all the criteria of the selected four Type IIs, too.
The five Type-II-Partnerships differ in their respective foci and which parts of societies in sustainable development they address. Some of their activities overlap but all in all they complement one another to engage in all compartments of societal development quite perfectly. GVEP focuses on social development and immediate poverty reduction through access to sustainable modern energy for communities particularly in rural areas. All partnerships have this focus on poverty reduction but REEEP promotes market development, EUEI fosters dialogue on policies and builds on activities of governments and other already existing actors from the field of sustainable development to attain immediate impacts, and GNESD comprises actors from the academia to cooperate with the other partnerships, consults and addresses energy policy reforms. Due to the special history of REN21, being the outcome of an official Political Declaration of an international conference of the international community of nations, it differs from the other global policy networks, and might turn out to be less active at the operational level and rather complementing the activities of the other four networks on sustainable energy.
The research will be based partly on documents and project reports of the different networks and partly on more than 35 semi-structured expert interviews with network members, and staff and experts from the network secretariats as well as with external experts.

*Exploration of Networks*
To describe the five global policy networks on sustainable energy, their development will be categorized according to the three phases of network development. In each of the phases, analysis will scan certain features in each of the explored networks for the hypothesized

effective mechanisms for governance in networks and check if and how they contribute to effective network governance.
In the first phase the emergence of global policy networks will be described and analyzed if governance design is process-related and which role leadership has played. In this part the history, the development of the governance structure, and the actors performing roles of leaders and partners of all five networks are introduced.
While global policy networks for sustainable energy can contribute in various ways to serve the interests of different actors, costly action for the private sector requires for special reasons. There are a number of rationales for self-interested actors to collaborate in global policy networks for sustainable development. A good *reputation* serves companies to enjoy a competitive advantage in a *second round of licensing*, as, for instance, in the case of oil companies which compete for licenses from governments to drill an oil well. Externally, *public pressure* by NGOs might force companies to invest in sustainable development to safeguard their profits, for in markets, where consumers perceive products as homogenous and are not able to differentiate the products' qualities a positive brand reputation may be the crucial difference to tip the *consumer's buying decision* in favour of one supplier or the other. Internally, the *motivation of employees* may be enhanced by a sustainable image of the company and opportunities to participate in activities for sustainable development. To a certain degree, such action might be due to *bounded rationality*, companies simply follow market leaders and first movers in order to avoid to be left behind, when the market moves on. Investments in activities for sustainable development may feed into *strategies of company development*. To innovate and develop creative solutions for societal and environmental challenges might be opportunities to access new markets and develop the whole company strategically and sustainably. Commitment in sustainable renewable energy and energy efficiency markets can be profitable as well due to the fact that companies can gain leadership positions, so-called *first mover or early-mover advantages*, in future growth markets through stimulation of innovation, saving costs through 'eco-efficiency'.
Rational self-interested actors are sometimes even willing to cooperate if this collaboration impairs their profits, or free-riding might be a cheap opportunity. For, their understanding is that certain public interests *will* be served by policy makers through *regulations* someday somehow which, however, may cause distortions that would be worse than the lost profits through cooperation and voluntary commitment to sustainable development. Commitment to sustainable development is significant for the whole environment of investments. To consider sustainable development goals may be necessary to increase the confidence of *shareholders and investors*. For they want to know if the company is prepared to avoid upheaval against the company and for the risk of possible future regulations.
Also, many companies are interested in action for sustainable development predominantly in order to manage risks. They regard investments in sustainable development as *risk management* in order to avoid running into economic, social, or environmental costs and *future liabilities* for climate change.

In the phase of network development when those actors affiliate with global policy networks and start collaboration, hypothesis 1 applies that network governance strategy must harness a process-related approach. The examples of the design of governance structures of the five explored networks show that all networks have built into their governance structure elements to allow for participatory development processes of the network in a somewhat evolutionary way.
Processes have a beginning and an end, they are not just there. Processes need leaders to initiate and actors to realize them. However, leadership in networks is always only temporary and will shift from one partner to the other or even from the network hub to more decentralized partners.

Leadership is necessary during this first phase of each network, although in the long-term hierarchical positions will hardly be accepted by the autonomous partners. Hence, hypothesis 1 needs modification: *Network governance strategy must harness a **process-related approach** and needs **leadership** to initiate processes.*

The second phase focuses on the operational strategic activities of the explored networks and which resources and instruments the networks harness. An account of financing, activities including institutionalized instruments to manage the semi-public network resources of knowledge and social capital, and how the different networks execute the network functions is provided.

On this second stage first reforms of the original network governance can already occur and adapt the network governance to external requirements of what the network is engaging in. Operational activities of all networks gave evidence for what hypothesis 2 asserts: Global policy networks harness the semi-public resources of knowledge and social capital contained in the network as resources for action, although the explored networks are still in the process to develop or refine a knowledge- and contacts-related network governance strategy. GVEP has put a focus on the organization of effective knowledge exchange, GNESD provides a global knowledge base and aims at networking with other sectors, EUEI connects its knowledge management with managing relations to partners, REEEP manages contacts and lessons learnt amongst network partners, together with REN21, REEEP has developed REEGLE, an institutionalized tool for the efficient management of knowledge and contacts, and REN21 has set itself the goal to generate and disseminate knowledge and network key actors. All networks harness knowledge and contacts as resources for action in their partnership activities. Hard resources like power or financial assets for projects are accessed and leveraged with the help of the soft resources *knowledge* and *contacts*. Hence, the management of knowledge and social capital has become the core business of the explored networks.

Due to the pivotal role of knowledge and social capital, networks need a network governance strategy how to manage these resources. However, demands for an efficient management of these resources deny defining specific management interventions, only self-organizing dynamics can support the emergence of spontaneous order. Therefore institutionalized instruments continuously developing and up-dated by individual users to manage knowledge and contacts in a decentralized way need to be installed. The knowledge map and the actors' catalogue contained in REEGLE serve this purpose. Such knowledge maps should be connected to an actors' catalogue of the respective knowledge holders in order to foster the building of relations between knowledge holders and knowledge users. An institutionalized frame might thereby form a marketplace of accessible capacities and expertise of actors, where partners might find each other for collaborative activities. Thus, an incentive structure could be created to make knowledge seekers to knowledge sharers, as one interviewee framed it and described the problem of networks of not being able to incentivize partners to share their knowledge.

Concluding, **hypothesis 2 (a)** *Network governance strategy must organize and provide the network resources of **knowledge** and **social capital** for collective action of partners, obeying the principles of **open access** and **transparency** as well as **common goals** and **clear objectives**, practicing **lean management** while reaping **synergies*** can be confirmed as well as **hypothesis 2 (b)**: *The management of network resources of knowledge and social capital must institutionalize instruments of a **knowledge map** and an **actors' catalogue**.*

Apart from the hypotheses on Governance in Networks, the theses on Governance through Networks are evaluated and could be confirmed in parts but had to be modified and amended as follows:

Thesis 1 on how and which actors should be integrated in a network can be confirmed. All explored networks targeted certain actors like local partners, actors from certain sectors, boundary spanners, or certain leaders and "innovators", and invited them to join the network and assume important roles. Additionally, all networks apart from GNESD are open for actors willing and committed, although in the case of EUEI, which has to distribute the most financial means, it has to be taken into account that clear-cut boundaries are needed as well if private resources are provided. Hence, **thesis 1** can be confirmed: *Network partners must balance **openness** for new external actors and ideas with **clear boundaries** of and roles within the network to include relevant actors, and cohere and direct network partners' activities through **clear objectives**.*

With regards to the interest mediation function of networks, it turned out that leadership is, indeed, considered to be important, but actors are reluctant to assume leadership. For, networks connect autonomous actors, power asymmetries might hurt the independence and thereby the ability and readiness to collaborate. In general, conflicts are avoided not solved in networks and rather terminate the partnership if controversial issues cannot be deleted. The free flow of information through transparency, communication, and openness is considered to best avoid conflicts. Hence, mutual learning is fostered and fosters cooperation without conflicts. Issue-linkage is, indeed, considered important to overcome conflicts effectively and identify integrative solutions. Complementary resources and capacities allow identifying project-related common interests, so that independent and autonomous actors, who might even be competitors, can cooperate in spite of conflicting interests, which must be acknowledged and understood as such, at a more general level, and responded to at an operational level somehow. On the other hand, clear-cut roles were mentioned by nearly all interviewees as supporting the network governance effectiveness.

Concluding, **thesis 2**, can be slightly modified as follows: *Network partners must link intersecting issues by taking on **leadership** roles, increasing **transparency**, enhancing **knowledge**, fostering **openness**, cultivating **free communication**, and building **social capital** among partners.*

The thesis 3 that knowledge sharing of partners in global policy networks should pro-actively distribute needed knowledge by targeting and connecting stakeholders and knowledge holders can be confirmed in so far as all explored networks indeed have a focus on pro-actively managing and distributing knowledge and also on connecting partners. However, the empirical research showed that in the context of knowledge sharing other problematic constellations must be considered.

In order to avoid an information overload through increased access to knowledge and information, networks and certain partners should serve as gatekeepers, supported by institutionalized instruments like a knowledge map and an actors' catalogue. This role can be a very powerful one which is why this actor needs to be neutral and a widely trusted partner. The pro-active distribution of knowledge comes always close to lobbying for vested interests. Hence, transparency and openness must not only foster exchange and sharing of knowledge but also ensures a control of exertion of influence through interest-led provision of knowledge. At the same time, transparency and openness as well as overlapping activities and knowledge capacities of various network partners serve as self-enforcing control of accessible knowledge and foster self-organizing processes of knowledge sharing.

Therefore, **thesis 3** should be amended as follows: *Network partners must pro-actively manage **knowledge** and target relevant actors, and at the same time must control quality, relevance and reliability of accessible knowledge through **openness** and **transparency** in the network.*

Transparency fostering knowledge sharing supports also the execution of the network function of partner selection. No matter if global policy networks pro-actively identify and connect partners with complementary capacities or not, networks always provide the forum to

find partners and build trust to lower transaction costs among these partners. In fact, the explored networks aim to select partners and connect them. GVEP does that informally, while REEEP and REN21 have established the REEGLE tool for this purpose. Hence, thesis 4 can be confirmed, though in reality some other important features are considered by network partners when partnering. Partners choose each other usually strongly relying on personal relations less considering strategic issues like who matches needs most or with whom a win-win situation might be created. Nevertheless partner selection is a strategic issue and therefore an issue of senior management level. That's why the effectiveness of governance through networks strongly depends on high-ranking individuals from partner organizations personally committed to the case of the network. Only through these high-ranking individuals and personal relations among them networks are able to effectively select partners and connect them for action for sustainable development.

Concluding **thesis 4** should be specified as follows: *Network partners must use networks as **transparent** forum and rely on the **social capital** of the network to identify potential partners of good **reputation** and high **credibility** with complementary capacities for collective action.*

All networks support free communication among partners and thereby contribute to coordination of the activities of autonomous actors. However, these free communications mainly base on personal contacts of high-ranking individuals, but not on strategies for communicative action. Intentional matching of messages, recipients under consideration of their respective rationales for action, and channels of communication bases on individual communicative solutions. The networks which engage in such management of communication among partners, namely GVEP, GNESD and EUEI, give an example for this practice of individual, strongly personal contact based communications.

Hence, although as free as possible communications are supported in all networks and are supposed to generate consensus as well as to inform policy-makers in bottom-up processes, thesis 5 cannot be fully confirmed because network partners do not follow a common strategy for intentional matching of message, audience and channel. Therefore, only part one of **thesis 5** can be stuck to and specified, while part two needs to be discarded: *Network partners must cultivate **as free as possible communications** to generate consensus and enable bottom-up processes to inform policy-makers.*

Networks addressing long-term effects require to be judged by their long-term effectiveness which is particularly justified in the context of sustainable development. However, many interviewees agreed that it is still too early to measure the long-term effectiveness of type II partnerships. Nevertheless there are indications for what network governance strategy might enable actors to start effective collective action.

Actors' orientations, as asserted in thesis 6, are indeed very important for collaboration as most cooperative action bases on personal relations. Collaboration among network partners can enhance effectiveness by producing synergies and thus sustainable outcomes because networks increase capacities of individual partners, as one interviewee described the advantage of networks explicitly. Hence, **thesis 6** can be confirmed: *Network partners must find partners for implementation who share **common goals** and who enjoy high **credibility** with regards to mutually matching orientation.*

Finally, the third phase provides an analysis of strategies how the networks plan to act, long-term stability of their roles in relation to markets and states, effectiveness of their activities in terms of progress towards a priori goals and of ability to solve problems of energy markets, and efficiency of network governance and how fostering conditions and strategic management fit each other.

However, effectiveness of network governance is only comparable to governance through treaty-based international multilateral regimes if networks achieve to up-scale their partnership action. After all, the overall judgement on capacities and limits of global policy

networks by interviewed experts was that the capacity of network governance is always limited and depends strongly on the following:

(i) if they can successfully foster the process towards sustainable development. One interviewee with experiences in promoting sustainable initiatives in markets in various countries described the right timing as pivotal for effective action, being "more art than science". Effectiveness of strategic activities depends on addressing the well-informed key people in politics and economics at the right time;

(ii) if leadership can be established among the many and various network partners to initiate effective activities;

(iii) if partners are credible, what one interviewee from an IGO rated as the basic prerequisite for trusted relations and partnership activities, and if the network contains sufficient complementarity and similarity to provide social capital for action;

(iv) if needed resources are accessible and partners are able to manage them effectively, particularly the strategic use of knowledge has a long-term leverage while financing brings about immediate effects;

(v) if a governance strategy is available to organize collective action.

Additionally, several success factors for the effectiveness of network governance could be identified. Indeed, it appears that the success factors are somewhat building blocks for and correspond with mechanisms described as the network partners' strategic activities to execute network functions:

- *Leadership*: Certain partners lead informally by their capacities and only in a limited area of operations in order to determine direction of certain activities.
- *Clear-cut roles*: Clear-cut roles in partnerships reduce complexity, ensure collaboration as a collective, and make networks and partnerships more manageable.
- *Credibility*: Credibility is no precondition but an enabling condition for cooperation as it creates trust amongst partners that all actors will fulfil their role in the relationship.
- *Communications*: Many actors use networks predominantly for communication purposes, hoping to reap synergies, thereby, and flexibility enables to recognize errors and adjust objectives and strategies.
- *Process approach*, namely an ongoing, evolutionary process of relationship-building and internal dynamics of networks, allowing changes in the network governance strategy.
- *Access to information* and the managed, pro-active distribution of relevant information as well as self-organizing processes to use and enhance knowledge collectively.
- *Multisectoral partners* and the diversity of partners provide and look for different network resources to access.
- *Common goals*: Partners need to pro-actively integrate relevant and as many actors as possible. To this end, goals can be defined in an inclusive way and actors who can commit and contribute to these goals can be integrated pro-actively.
- *Clear objectives*: Inclusive goals, however, must not make these goals vague. Clear objectives and strategies are recommended at least at the project level.
- *Good management* means lean management of and through the network secretariat, performing roles of gatekeepers. Many interviewees explicitly pointed to good and lean management as a success factor or even a prerequisite for networks to be able to organize collective action and to function as efficient governance instruments.
- *Openness*: Openness allows to integrate both as many actors and, thereby, as much diversity of needed resources or accessible holders thereof as possible which might foster collaborative partnership action and maintain network dynamics.
- *Transparency*: Transparency allows for actors to identify partners for action and find needed resources among the diverse and many actors.

- *Synergies*: Particularly those actors with strictly limited budget constraints depend on the emergence of synergies, a resource value enhanced through common use of semi-public resources.
- *Reputation* and *high-ranking partners* in order to achieve a bigger outreach and higher effectiveness and enhance cohesion within the network.
- *Local ownership* can foster self-organizing dynamics within networks.
- *Up-scaling* allows to support and leverage activities of partners.
- *Network structure or network idea as such:* Only through the instrument of global policy networks certain solutions can be effectively disseminated.

As well as the effectiveness of global policy networks and how to increase it, networks are supposed to work on very slim budgets and be more efficient than traditional forms of international cooperation. In order to compare the efficiency of network governance of the different networks, the ratio of effectiveness of network governance to costs of network governance of each network had to be compared. These data are, however, hardly comparable because all networks differ in the foci of their activities and have different leverages to achieve their different goals. Thus, REEEP, GVEP and EUEI engage in project activities with REEEP having a focus on sustainable development and GVEP and EUEI on pro-poor energy access policies. They all address regulatory frameworks of energy markets and energy policies as REN21 does, but REN21 enjoys more legitimacy as outcome of the declaration of an international conference and has thus stronger leverages. While GNESD is not at all engaged in project implementation activities but provides knowledge for the wider sustainable energy community. Hence, it is difficult to determine which network is most effective in terms of contributions to problem solving of their specific area of activities.

The costs of network governance are the budgets the networks have at their disposal leaving aside the costs of network partners to participate in network activities. These budgets again differ to some degree. EUEI managing the Energy Facility have most funds for partnership projects, with REEEP and GVEP following, whereas REN21 and GNESD have smaller budgets because they do not fund project implementation activities. However, the effectiveness achieved by REN21, REEEP, and GVEP whatsoever in consideration of their tiny budgets and at the same time the fact that these networks have the best systemic conditions to enable self-organizing dynamics suggest that *self-organizing dynamics*, indeed, contribute to efficiency of network governance.

For, the challenge to govern a complex system like a network or even the network's environment requires a holistic approach to governance as actors are hardly capable to govern complex systems. Thus, governance must come from the system level and be self-organizing. Actors can only influence governance contextually. A *complex structure, self-referential processes* and an *autonomous network* as well as *autonomous actors* represent the necessary conditions for social systems in general and global policy networks to generate self-organizing, spontaneous order in particular. Provided these three necessary conditions are met, *redundancy in strategy and action of network partners* is the sufficient condition for the emergence of self-organizing dynamics.

This was also subject of hypothesis 3 on Governance in Networks. Although this hypothesis was not confirmed explicitly by any interviewee, the actual network practices give indication that mechanisms of effective network governance indeed depend on both self-organizing processes and complementary strategic management interventions. Thus, **hypothesis 3** on Governance in Networks, can be confirmed through analysis of network practices and specified as follows *Network governance strategy must be efficient through fostering and harnessing* ***self-organizing dynamics*** *by cultivating openness and transparency to reap synergies of independent partners' individual activities.*

**Table: A Network Governance Strategy: Market Failures and According Functions to be Executed by Networks**

| Market Failures | Functions of networks | Strategic action to be considered by network partners in their individual action |
|---|---|---|
| *Social sustainability* | | |
| Barriers to enter the market | Integration | • Integrate local partners, boundary-spanners, and 'innovators', multipliers<br>• Balance openness and clear-cut boundaries |
| Lack of sustainability/ misallocation of resources | Interest mediation | • Create win-win situations by connecting partners with complementary resources and linking intersecting issues<br>• Build trust<br>• Disseminate knowledge, cultivate transparency, openness, free communication<br>• Establish leadership |
| *Environmental sustainability* | | |
| Imperfect information | Knowledge sharing | • Connect actors to knowledge holders<br>• Work as gatekeeper for information flows in the network<br>• Create a dynamic, continuously up-dated knowledge map<br>• Increase transparency and openness |
| Lack of capacities/ prohibitive costs of transactions | Partner selection | • Connect knowledge map to an Actors' Catalogue<br>• Connect partners with complementary capacities and resources<br>• Use personal relations<br>• Target high-ranking individuals<br>• Use credibility and independence to identify opportunities for cooperation<br>• Support capacity building |
| *Economic sustainability* | | |
| External Effects | Coordination | • Create opportunities for free communication<br>• Inform policy makers through bottom-up processes |
| Long term effects | Implementation | • Connect partners to share risks and costs<br>• Match partners with complementary orientations<br>• Start action on the ground<br>• Produce value-added |

*Conclusion*

The hypotheses describe effective and efficient governance in networks. The supposition is that only if governance in networks is effective and efficient, governance through networks, as asserted in the six theses, can effectively and efficiently help to solve problems. The hypotheses on governance in networks describe how the asserted activities in the six theses on governance through networks must be executed. However, only these activities have an impact on global issues. Hence, without effective governance through networks everything is nothing.

**Table: Summary of Effective Mechanisms of Network Governance**

| | | |
|---|---|---|
| **Phase 1: Design of Governance** | | |
| **Hypothesis 1:** | *Network governance strategy must harness a **process-related approach** and needs **leadership** to initiate processes.* | *Tested & modified* |
| **Phase 2: Becoming operational and first reforms** | | |
| **Hypothesis 2 (a):** | *Network governance strategy must organize and provide the network resources of **knowledge** and **social capital** for collective action of partners, obeying the principles of **open access** and **transparency** as well as **common goals** and **clear objectives**, practicing **lean management** while reaping **synergies**.* | *Tested & confirmed* |
| **(b):** | *The management of network resources of knowledge and social capital must institutionalize instruments of a **knowledge map** and an **actors' catalogue**.* | *Tested & confirmed* |
| **Phase 3: Long-term Developments** | | |
| **Hypothesis 3:** | *An efficient network governance strategy must foster and harness **self-organizing dynamics** by executing network functions in a way that creates enabling conditions for collective action of independent network partners to self-organize in their individual activities for sustainable development.* | *Tested & confirmed* |
| **Beyond Phases: Functions of Strategic Action** | | |
| **Thesis 1:** | *Network partners must balance **openness** for new external actors and ideas with **clear boundaries** of and roles within the network to include relevant actors, and cohere and direct network partners' activities through **clear objectives**.* | *Tested & confirmed* |
| **Thesis 2:** | *Network partners must link intersecting issues by taking on **leadership** roles, increasing **transparency**, enhancing **knowledge**, fostering **openness**, cultivating **free communication**, and building **social capital** among partners.* | *Tested & modified* |
| **Thesis 3:** | *Network partners must pro-actively manage **knowledge** and target relevant actors, and at the same time must control quality, relevance and reliability of accessible knowledge through **openness** and **transparency** in the network.* | *Tested & amended* |
| **Thesis 4:** | *Network partners must use networks as **transparent** forum and rely on the **social capital** of the network to identify potential partners of good **reputation** and high **credibility** with complementary capacities for collective action.* | *Tested & modified* |
| **Thesis 5:** | *Network partners must cultivate **as free as possible communications** to generate consensus and enable bottom-up processes to inform policy-makers.* | *Tested, partly discarded & modified* |
| **Thesis 6:** | *Network partners must find partners for implementation who share **common goals** and who enjoy high **credibility** with regards to mutually matching orientation.* | *Tested & confirmed* |

Controlling for large budgets for project activities and focusing on indirect and gradual effects, corresponding to the leveraging effect global policy networks are supposed to have, the identified *mechanisms of network governance*, as phrased in the three hypotheses and six theses, *enable global policy networks to increase the effectiveness of international policies for sustainable development*. Global policy networks serve more than window dressing purposes. If the identified mechanisms of network governance are not considered, more hard resources must compensate for the lack or shortcoming of network governance. Nevertheless, hard resources, legislative rule-setting power and international regimes are still more important for the effectiveness of international policies. Networks can work as a *leveraging instrument, not as the solution itself*. As long as there is no effective international regime, voluntary cooperation can, indeed, pave the way to an international agreement and spur collective action even when an international agreement could already be reached. Global policy networks might be effective as an enabling condition in the process of an international regime, not as an alternative to a regime.

Networks as complementary form to markets and hierarchies might increase both effectiveness and efficiency. For only networks might mobilize public as well as private goods as resources for action for sustainable development, as only networks maintain the autonomy of actors in free markets, integrate hierarchical actors and identify and organize opportunities for collective action of those actors.

Therefore, global policy networks might not be a silver bullet to solve all problems of sustainable development but they might foster an enabling environment and enable actors to be more agile and achieve in cooperation what they could not achieve without cooperation and the enabling cooperative networks. The effectiveness of global policy networks as mechanism in global environmental governance and as tool in the hands of policy-makers though depends very much on the cleverness of these policy-makers to apply strategic principles and action in the use of these networks.

**Table: Mechanisms of Network Governance in Scrutinized Global Policy Networks**

| Mechanism of network governance | GVEP | REEEP | GNESD | EUEI | REN21 |
|---|---|---|---|---|---|
| | | | | | |
| *Hypothesis 1 on Governance in Networks* | | | | | |
| Process | ✓ | ✓ | ✓ | × | ✓ |
| Leadership | (✓) | ✓ | ✓ | ✓ | ✓ |
| *Hypothesis 2 (a) on Governance in Networks* | | | | | |
| Provision of knowledge as network resource | ✓ | ✓ | ✓ | (✓) | ✓ |
| Provision of social capital as network resource | ✓ | ✓ | (✓) | (✓) | ✓ |
| *Hypothesis 2 (b) on Governance in Networks* | | | | | |
| Instruments for resource mapping | (✓) | ✓ | × | × | ✓ |
| *Hypothesis 3 on Governance in Networks* | | | | | |
| Strategic management for self-organizing dynamics | ✓ | ✓ | ✓ | ✓ | ✓ |
| *Thesis 1 on Governance through Networks: Integration* | | | | | |
| Integrating multipliers, innovators, boundary-spanners pro-actively | (✓) | ✓ | ✓ | × | ✓ |
| Balancing openness with clear-cut boundaries | (✓) | ✓ | × | × | ✓ |
| *Thesis 2 on Governance through Networks: Interest Mediation* | | | | | |
| Leadership (to mediate conflicting interests) | ✓ | ✓ | ✓ | ✓ | ✓ |
| Disseminating knowledge through transparency, (internal) openness, free communication | ✓ | ✓ | ✓ | × | ✓ |
| Building trusted relations and connecting partners | ✓ | ✓ | × | × | ✓ |
| Linking intersecting issues | (✓) | (✓) | × | (✓) | × |
| *Thesis 3 on Governance through Networks: Knowledge Sharing* | | | | | |
| Distributing knowledge pro-actively | (✓) | ✓ | ✓ | × | ✓ |
| Connecting partners pro-actively | (✓) | (✓) | × | × | ✓ |
| Gatekeepers for knowledge | (✓) | ✓ | ✓ | × | (✓) |
| Openness | ✓ | (✓) | × | (✓) | ✓ |
| Transparency | ✓ | ✓ | ✓ | × | ✓ |
| *Thesis 4 on Governance through Networks: Partner Selection* | | | | | |
| Transparency and spaces for partnering | ✓ | ✓ | × | × | ✓ |
| Networking along personal credible relations | ✓ | ✓ | ✓ | (✓) | ✓ |
| Pro-active support through high-ranking individuals | × | (✓) | (✓) | (✓) | ✓ |
| Matching complementary capacities | (✓) | (✓) | × | (✓) | (✓) |
| *Thesis 5 on Governance through Networks: Coordination* | | | | | |
| Free communications | ✓ | (✓) | (✓) | (✓) | ✓ |
| Informing policy makers through bottom-up processes | ✓ | ✓ | ✓ | ✓ | (✓) |
| *Thesis 6 on Governance through Networks: Implementation* | | | | | |
| Increasing capacities by sharing common goals, risks and costs | ✓ | ✓ | × | ✓ | (✓) |

✓: mechanism applied in network
(✓): mechanism applied with limitations in network
×: mechanism not applied in network

## Annex

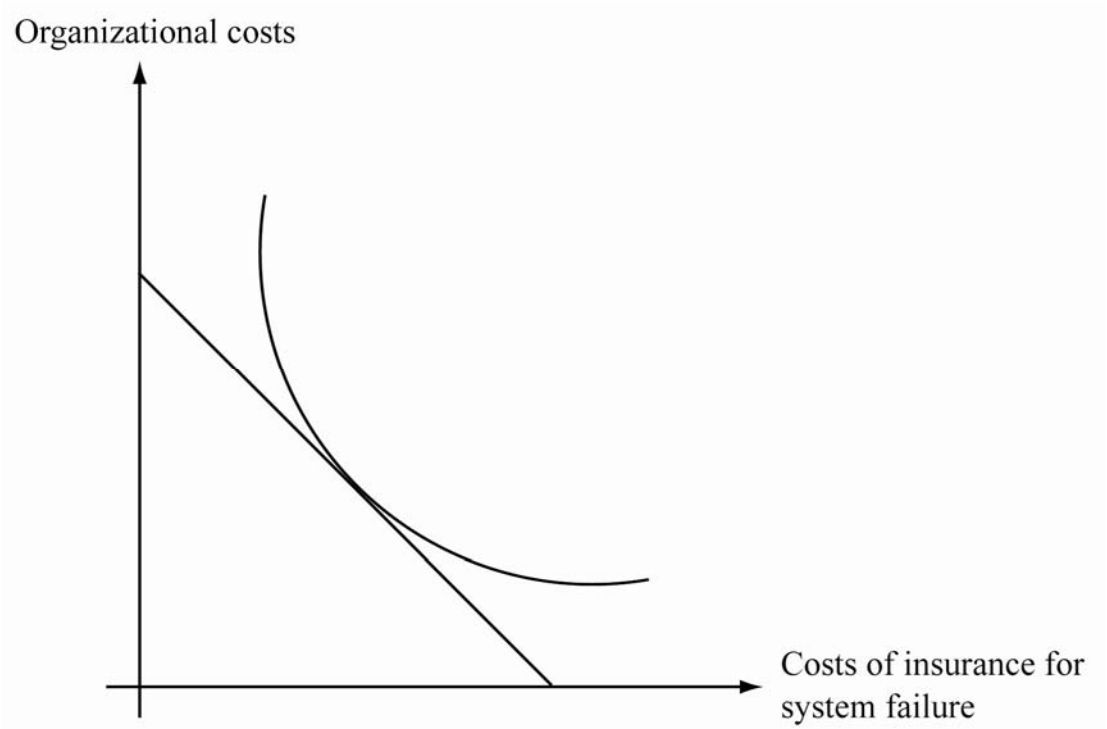
### Redundancy and the Cost-Effectiveness Ratio

In the point of maximized efficiency the individual marginal costs ($MC_{ind}$) of redundancy of action equal the utility of additional action ($u(a_{add})$). In a regime situation, which force actors to insure their activities against the failure of their activity to produce sustainable outcomes, for instance against related environmental risks implied in their activities, the additional action will equal the saved costs of insurance ($C_{ins}$). These insurance costs depend on the calculated probability of failure of the system to be insured. The additional action for sustainable outcomes is supposed to decrease the probability of failure.

(1) $MC_{ind} = u(a_{add}) = C_{ins}$

Basically, actors obey a budget constraint as the following graph shows:

**Diagram: Optimal Point of Redundancy**




Along the curved graph, representing an isoquant of an effectiveness level, redundancy is increasing from the South-East to the North-West.

| Redundancy | Probability of system failure | Organizational costs |
|---|---|---|
| low | high | low |
| high | low | high |

The straight line represents the budget constraint of an organization or a network as discussed. The budget must be distributed between costs for organizing effective action, which is increasingly difficult and costly with growing redundancy. On the other hand the probability of system failure and costs for repair or insurance decrease with growing redundancy. Hence, there is a trade-off between costs for insurance and costs for organization along the curve of increasing redundancy with the point of maximized effectiveness at a given budget where the slopes of the budget constraint and the isoquant of effectiveness are equal.

The slope of the budget constraint reflects the ratio of today's costs to tomorrow's costs, i.e. the costs of today to organize action and the costs of tomorrow to repair the damage of lack of

sustainability due to unsatisfied needs or needs satisfied in a non-sustainable manner. If these costs of repair are insured, the costs of tomorrow are transferred into insurance costs which are calculated with regards to the probability of system failure. The argument is that more redundant action is the lower is the probability of system failure. (Landau 1969)
Thus, after all the question of optimized cost-effectiveness ratio is again one of paying today or tomorrow and thereby of who is going to pay, which is, in fact, the question of sustainable development in general. And it is again a tragedy of the commons, for, today's costs of organizing effective action are individual costs of employed man power, while tomorrow's costs are social costs because non-sustainable action implies costs of social and environmental damages, governmental costs to control the action of various actors, and costs to be shared by all including the actors who did not pollute or exploit the commons.
Global policy networks are now supposed to communicate these negative external effects and thereby help to consider them in individual strategic action. If partners achieve to do that with the instrument of a common strategy, they will achieve to optimize their redundant action and maximize efficiency of strategic action.