



INTERNATIONAL HYDROLOGICAL PROGRAMME

Networking in the water sector: Suggestions and examples for best practice

Report of the Community of Practice on Networking for W-E-T (Water-Education-Training)

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Executive Summary

This report on networking in the water sector discusses basic concepts of abstract networks as models of society. Networks must have declared **objectives** related to the target group of **actors** and build upon the intensity level of the **interaction** among actors. The following typology of networks is proposed:

Low-intensity networks

- *A. a **FORUM** (market-place, agora): a regularly organised meeting where information and ideas are exchanged and discussion can be freely engaged; nowadays this forum-type of interaction among actors is often complemented by a “virtual forum” through Internet.*
- *B. a **PLATFORM**: a group of actors that supports an existing programme/project or plan a new programme/project; such an interaction could be the outcome of a forum.*
- *C. an **ALLIANCE**: a more or less diffuse link between actors or between several networks, whatever their type, with common objectives.*

High-intensity networks

- *D. a **CLUSTER**: a group of actors or partnerships which shares common support structures and seeks to exploit complementary characteristics of the group or results of projects.*
- *E. a **PARTNERSHIP** or **CONSORTIUM**: a group of actors executing together a project of limited duration.*

Networks can be **multi-modal**, operating at different levels of intensity. They can be established either top-down or bottom-up or as a combination of both approaches.

The **structure** of the network describes the actors, the objectives and the interactions amongst actors. It may be a **horizontal** network when most of the actors are of the same nature; or **vertical** networks when actors are of a quite different nature, e.g. universities and enterprises. Vertical networks are rare and have more difficulty surviving. Internal and external coalitions amongst actors define the integration of the actors in the network.

The **culture** of the network is essentially democratic and non-hierarchical, based on a **code of conduct** for interaction among the actors. Also important to consider is the **strategy** of the network, and an understanding of the **expectations** of the actors. One can only talk about a network if there is minimum **stability** of the network, and this depends on the **mutual trust** and **confidence** between the actors, next to more material prerequisites as adequate management and sustainable funding.

The **selection and type of actors** play an important role. **Inclusive networks** accept all actors fulfilling the description of the target group and subscribing to the code of conduct. **Exclusive networks** invite selected actors to join and the number of actors is deliberately limited. The actors may be either individuals or representatives of a legal body (an institution). **Excellent networks** are those where actors have strong ties and few **isolates** exist.

A feasibility analysis based on available or expected internal and external resources must define the **management** model to be adopted when initiating/creating a network. A feedback mechanism between structure, culture and management is required. The role and competence

of the **facilitator** (for low-intensity networks) or **coordinator** (for high-intensity networks) is crucial.

The **quality of networks** is described by the **effectiveness** and the **efficiency**. The former is related to the satisfaction of the actors and is best evaluated through a **self-assessment** procedure by the actors, regularly repeated. The latter should be made measurable as much as possible but it should be recognised that both resources and benefits of networks are often also 'intangible': e.g. the expertise of the actors, and the prestige of the network. Based on a project-wise approach of the objectives, on the number of actors and on the number of countries involved, six **performance indicators** are proposed to measure the efficiency:

- the Density Δ of the network
- the Actor-Project-Integration API index
- the Actor-International-Integration AII index
- the Actor-Country-Integration ACI index
- the Project-Duration-Index PDI
- the Actor-Project-Closeness APC index

Some of these indicators are applied to the examples of best practice. Many more applications are expected in order to test the consistency and general applicability of these indicators.

Many more performance indicators could be introduced if data are available, e.g. about resources allocated to different projects and actors. Trend analysis allows for evaluation over time within a network or amongst networks.

The results of a **survey on networks**, conducted in 2002, based on a theoretical part A (the expectations of the people interested in networks), and an applied part B (for identified networks where also '*obstacles encountered*' were investigated) are summarised. The results of Part A generally confirm the concepts introduced above. Part B, in general, shows a realistic approach from both the co-ordinators and the other actors with respect to the limitations of the identified networks. However, in Part B the respondents fail to recognise the '*obstacles encountered*' because the quality aspects of the network are seldom evaluated more than satisfactory. **It is concluded that quality issues in terms of effectiveness and efficiency of networks are not well addressed.**

GOUTTE of WATER, a project of the International Hydrological Programme (IHP) Phase VI (2002-2007) of UNESCO will act as a feedback mechanism for these issues.

The report concludes with:

- **suggestions for best practice** with the aim to help when creating or when developing/operating a network and to avoid failures;
- a list of eight **examples of best practice of networks** in the water sector, covering as well university networks as university/administration//enterprise and water utilities networks.

Since networking is a daily, and thus important, activity of everyone, it is believed that the report will be of practical use: networks always raise new expectations, offer generally benefits, but can also lead to disappointments should they be ill-conceived and/or half-heartedly implemented and managed.

Foreword

The 1990s proved to be a very important decade for the 'Water World'. The concerns of scientists and water resources professionals regarding a looming water crisis have gradually received the political attention long due. . A number of intergovernmental but also scientific conferences mark the emergence of this water awareness in politics within the professional community and in public opinion. The evolution of the world water fora (Marrakech 1997, The Hague 2000, Kyoto 2003) and the World Summit on Sustainable Development (WSSD), Johannesburg 2002, duly reflect these trends. Ministerial conferences, combined with technical events and NGO meetings indicate the increased readiness for dialogue to share information and knowledge towards the formulation of holistic principles, strategies and actions.

The World Water Vision, a document prepared for the 2nd World Water Forum refers to water as 'everybody's business'. As far as the professionals of water related education and training are concerned, this statement implies a challenge of unprecedented magnitude. The Vision document also claims that the water crisis is more a crisis of water governance than that of the availability of the resource. The Vision foresaw that for the coming decades the annual investment in water-related infrastructure and management should be approximately increased by 100 billion USD every year in order to secure a sustainable and equitable 'Water World' for all. This gigantic increased investment need implies that the professional capacity, both in its human and institutional dimension should more or less be doubled. Consequently capacity building institutions: universities, vocational schools and training centers should be strengthened . At the same time this is a challenge for these very same institutions, for the researchers and for the professionals to engage from within in finding innovative solutions, capitalizing on each other's strength and experience.

Partnerships within the capacity building community, but also among all stakeholders of the water world, are needed to explore these potentials, to generate and to disseminate knowledge and skills. The WSSD explicitly endorsed these partnerships as an important vehicle to bring the much needed change in approach, professional mentality and actions. As education was recognized as the key for sustainable development, the Johannesburg Summit recommended the launching of a United Nations Decade of Education for Sustainable Development, to be launched in 2005. In the meantime the United Nations General Assembly adopted this proposal And invited UNESCO as the designated lead agency to develop a draft implementation scheme.

The 1990s witnessed substantial social and political changes. Knowledge as the basis of the modern society was not only acknowledged but was also reflected in the term of the 'learning society'. Learning together was recognized as a powerful agent to live together, to create the basis of peaceful coexistence, mutual respect and trust . Education, training and research networks, first within the European Union then in the whole of Europe and beyond flourished, giving students, professors, scientist and professionals the chance to learn, to teach, to research and to practice together. Networking has proven to be a flexible tool to achieve capacity building objectives.

With this background in mind, the present publication summarizes the experience gained in human capacity building by networking all over the world. It classifies networks and provides the necessary definitions. While networking has widely been acclaimed as a good

approach, this publication is the first to venture to quantify how good is ‘good’. By making the first steps towards objective quality assurance, providing examples to best practices and summarizing what ‘you have to know about networking’ the present document can also serve as a reference to map strategies for and to implement collaborative schemes in human capacity building.

UNESCO wishes to express its gratitude to all who contributed to this publication, through replying to the questionnaire, providing examples, commenting and co-editing the report. Particularly thanks are due to André Van der Beken, whose dedication to and experience with networks was undoubtedly a source of inspiration and the driving force of this publication.

A. Szollosi-Nagy
Secretary
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1. Background

There is great interest in the concept of networks. **Networking** (i.e. *the active dimensions of networks: initiation, design, operation and, eventually, termination*), whether at the regional, national or international level, always requires a studious pondering and careful assessment of potentials, needs, benefits, costs and pitfalls.

At worldwide level, UNESCO has established its **UNITWIN/UNESCO Chairs Programme** since 1992, based on a university twinning and networking scheme. A World Forum of UNESCO Chairs was held in November 2002 to celebrate the tenth anniversary: several “water”-Chairs were represented and the Chair in Water Resources at Omdurman Islamic University, Sudan, received the UNITWIN Award for excellent networking.

At the European level, networks were explicitly promoted through several education, training, research and innovation programmes of the European Commission (EC) since 1986 onwards: four examples of best practice, described in this report, were or are funded by EC. The latest initiatives are in research and technological development (RTD): the **Sixth Framework Programme (2002-2006)** which will create **excellent networks** for research, also with partners of third countries; and in higher education: the launching of the **ERASMUS World Programme 2004-2008** for mobility of students and exchange of staff.

The Plan of Implementation of the **World Summit on Sustainable Development (WSSD 2002)** states:

- in its Article 102: “*Build greater capacity in science and technology for sustainable development, with action to improve collaboration and partnerships on research and development and their widespread application among research institutions, universities, the private sector, governments, NGOs and networks, as well as between and among scientists and academics of developing and developed countries, and in this regard encourage networking with and between centres of scientific excellence in developing countries.*”
- and in its Article 117 (b): “*Promote, as appropriate, affordable and increased access to programmes for students, researchers and engineers from developing countries in the universities and research institutions of developed countries in order to promote the exchange of experience and capacity that will benefit all partners.*”

A concrete action in this regard is the recommendation to the UN General Assembly of adopting an **International Decade of Education for Sustainable Development 2005-2014**.

***Nowadays universities, and in general all organisations,
are the product of their networks, rather than the reverse.***

This REPORT is based on the final outcome of a project entitled “*Networks for Education, Training, Research and Innovation with reference to the domain of Environment-Water – Suggestions for Best Practice*” (Van der Beken, 2002), sponsored by the research contingent of the Vrije Universiteit Brussel (VUB) for a sabbatical leave. The project was developed at the Division of Water Sciences of UNESCO as part of its International Hydrological Programme (IHP), phase VI (2002-2007), *Theme 5 “Water-Education-Training (W-E-T)” Project 5.4 Institutional development and networking for W-E-T.*

It was strongly supported by the Community of Practice “NETWORKING for W-E-T “ established at the *International Symposium on Human Capacity Building in the Water Sector through Innovation and Collaboration*, organized by IHE, UNU-INWEH, UNDP, UNESCO and WB, Delft (NL), 28-30 November 2001, aiming at a **Water-Education-Training (W-E-T) Strategy** with the explicit goal to present a report at the Third World Water Forum. About this International Symposium and its seven Communities of Practice see <http://www.ihe.nl/news/wet/index.htm>

2. What is a “Network”?

As soon as we see the word “network”, everyone immediately has preconceived ideas of what is a “network”. Our ideas about **physical networks** (such as transport networks of different kind, pipe-networks for water distribution or storm water and wastewater collection, gas-, electricity-, and telephone networks) are quite straightforward because we can “see” them. But what about networks of airways, radio/television-networks, the mobile telephone networks or the Internet?

This study deals with “**conceptual networks**”, i.e. concepts or models of the complexity of society as seen as a **system of interdependent “actors” who interact with each other**. This definition is very flexible and therefore sometimes too vague. E.g. a “*knowledge¹ driven network*” or a “*knowledge based network*” is a model of society of those who have knowledge in a given domain, create or increase and transfer this knowledge, i.e. the group of scientists and teachers or their organisations in which they work. But should the end-users of these activities not be added, i.e. the students and all those who will benefit of the scientific progress by increasing the knowledge in the given domain? What about the policy- and decision-makers who control the funding of the institutions where scientists and teachers can perform their tasks?

This example shows that conceptual networks are always “*social networks*”: they belong to the society as a whole. But understanding society and acting in society, given its complexity, is only possible if we split it up in simpler components represented by these “models” or networks.

Networks must have declared “objectives” related to the target group of “actors”: if those characteristics (objectives and actors) are unknown, one cannot define a formal network.

Among the many possible objectives of networks, the following can be listed as examples:

- information and communication, discussion and exchange of ideas
- articulation of needs and demands
- learning from others and sharing their knowledge
- transfer of knowledge and skills; improvement of competencies
- mobility and exchange of students and staff
- developing capacity building and cultural/linguistic capabilities
- joint development of projects and activities
- optimisation of means and methods
- innovation through transmission of new knowledge and skills;
- validation, demonstration and exploitation of methods and techniques
- dissemination of research results
- benchmarking and searching for best practices
- creation of a professional community
- synergy and pooling of expertise
- creating critical mass
- creating spin-offs.

¹ The editors are reluctant to use the common term “*knowledge network*” because the word “knowledge” is often misused, e.g. in the business term “*knowledge management*”. The business world has created – unfortunately – a terminological confusion between “*information*” and “*knowledge*”: the former term has a totally impersonal dimension and is pointless if not properly selected and wisely used, while the latter term is the outcome of a painstaking process of learning, memorizing, understanding, reflecting, comparing, selecting, critical and strategic thinking. It is of the highest personal value to an **individual** and is not “manageable”. Making information available for learning purposes and facilitating the learning process is still not yet the learning process itself that leads to “knowledge”.

Connections among actors are the third characteristic of a well-defined network: without connections, there is no network. In other words, there is certain interdependency between actors, which generates interactions and may lead to co-operation. The level of interaction will determine the “**network-intensity**”: sharing information can be seen as a low level of interaction, integration of two or more actors would be the highest level of interaction.

To understand better the linkage between objectives, actors and the level of interaction among actors - resulting in a network-intensity - the following **typology of networks of increasing intensity** is proposed:

Low-intensity networks

- *A. a **FORUM (market-place, agora)**: a regularly organised meeting² where information and ideas are exchanged and discussion can be freely engaged; nowadays this forum-type of interaction among actors is often complemented by a “virtual forum” through Internet.*
- *B. a **PLATFORM**: a group of actors that supports an existing programme/project or plan a new programme/project; the initiation of such an interaction could be the outcome of a forum.*
- *C. an **ALLIANCE**: a more or less diffuse link between actors or between several networks, whatever their type, with common objectives.*

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- *D. a **CLUSTER**: a group of actors or partnerships which shares common support structures and seeks to exploit complementary characteristics of the group or results of projects.*
- *E. a **PARTNERSHIP** or **CONSORTIUM**: a group of actors executing a project of limited duration.*

A network can be all of these at the same time or can limit itself to one (**uni-modal network**) or more (**multi-modal network**) of these interaction levels. The network can have long-term objectives and develop many partnerships or several levels of interaction to fulfil its objectives during its lifetime. Or it may, from the start, declare short-term objectives with a single level of interaction and terminate within a predetermined period.

The establishment of a network can be **bottom-up** or **top-down**. Historical examples of typical **top-down** approaches are the “Academies” established from the 17th century onwards in many countries. **Bottom-up** approaches were very popular and flourished from the 18th century onwards till today through scientific and professional associations: they contributed and still contribute largely to the scientific and professional world. In some cases these associations were the ancestors of governmental or intergovernmental institutions (e.g. the World Meteorological Organisation, a UN agency established in 1945, which developed from the International Meteorological Society founded in the nineteenth century).

² In a commercial environment such meetings may involve also *brokerage*.

A combination of both approaches is nowadays very common because it often stems from a financial incentive: a funding authority may offer only support to existing partnerships or to partnerships created for the purpose. This will have important consequences for the network, which will be discussed in the following chapters. The reasons for such initiatives of funding authorities can be found in the general perception that economic growth, or revitalizing the whole economic structure of a region, relies on stimulation of **innovation**:

- Enterprises, trying to survive and to flourish in an increasing global and competitive environment, seek alliances or clusters;
- Universities, struggling to meet the needs and changing expectations of society, seek to exploit better their capabilities through networking.

Another reason for such combined approach is the role networks can play as **organisations at the MESO-level** with respect to the MICRO-level of its actors and the MACRO-level of the policy- or decision making authorities (Figure 1). The latter will prefer to communicate with a MESO-level organisation rather than with a multitude of individual actors at the MICRO-level. And the individual actors will generally not have ready access to the MACRO-level. Networks often derive their usefulness or prestige from this role at the MESO-level.

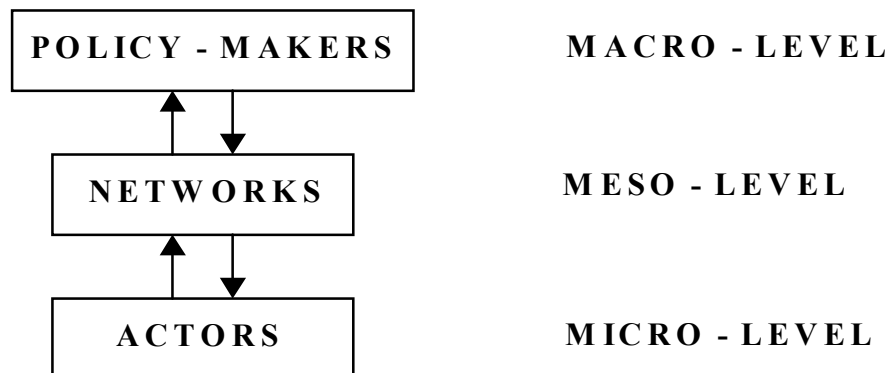


Figure 1. The role of networks at the MESO-level.

3. Structure, Culture and Management of Networks

3.1 The Structure

The above three characteristics (**actors, objectives, interactions**) which define a network, form the **structure** of the network. It is by no means a static structure, nor is it a uniform and closed structure. Some authors call it the “*black box*” structure of networks; others describe it as the “*garbage can*” structure of networks.

- Actors within a network may have different objectives, therefore the objectives of the network are potentially diffuse and pluralistic; there may be long-term objectives and operational short-term objectives which can be opportunistic, depending on the funding opportunities.

It has been said: a network is full of doors and windows for people to walk in and walk out and to look in and to look out; these doors and windows must stay open for the network to remain strong and to prevent the network of becoming isolated.

- The network is called a **horizontal network** when most actors are of the same nature (all actors are universities, or all are enterprises, e.g. in a federation of a given industry-branch); in a **vertical network** actors are of quite different nature. This would be the case in the above example of a “knowledge driven network” if end-users and policy-makers are included. Horizontal networks are the more common ones. Vertical networks are rare and (or because) difficult to make them sustainable, but they respond to the general trend for “integrated” approaches in society. Vertical networks are often seen as a threat by horizontal networks and a change of policy may bring these vertical networks to an end.
- Ad-hoc coalitions among actors may be formed within the network (**internal coalitions**): they create preferential interactions among some actors. There can also be **external coalitions** with actors not belonging to the network. Both types of coalitions affect the **integration of the actors** within the network, and thus the development or growth and eventually the termination of a network. These non-random connections between actors may be driven by external rules of eligibility for funding of projects.

*Networks can be seen as living organisms:
they are born, they grow, they mature, and they decline and vanish.*

However, the spirit of networking may be nurtured and could survive the network itself. This networking-oriented mindset could be seen as a cultural result leading again to the creation of new networks.

3.2 The Culture

The **culture** of the network is the set of rules (**code of conduct**) for interaction among the actors; it is also the **strategy** (anticipation, facilitation, organisation, evaluation, adaptation) of the network. The **expectations of actors** are mostly unwritten but are an important part of the culture. Actors, by joining a network, recognise their “dependency” but wish to minimise this dependency and maximise the benefits for reaching their own objectives. The uncertainty about these benefits is often higher than the risk of losing benefits by not joining the network. “Value for money” is often the creed. But actors should be willing to invest with own resources in their network, because in the long run, this is in their own interest: belonging to a strong network.

The **bottom-up** or **top-down approach** for creating the network is obviously of great importance for the culture of the network. If actors are ONLY interested in the financial support and do not have long-term expectations for co-operation – as may be the case if the funding agency is not selecting the partnership upon the basis of long-term objectives or does not have by itself a long-term policy for funding- the **stability of the network** will be minimum and the **mutual trust and confidence** among the actors will be weak.

One can only talk about a network if there is a token stability of the network.

Given the structure of networks, the culture is essentially **democratic, without hierarchy** (“*equivalence of nodes*” in social network analysis) and based on a spirit of **voluntarism**. In creating a network, the basic objectives must be formulated carefully and a feasibility analysis must be made, knowing the resources available in the nucleus (i.e. the initiators) of the network and the environment in which it will operate.

For the more intensive networking (see the typology proposed above) both structure and culture can be laid down in **statutes**, often registered as regulated by law³. This helps for the stability of the network, but care must be taken that the statutes still allow for a reasonable flexibility of the network. Hence, structure and culture should be described in most general terms in the statutes, while detailed aspects of the code of conduct can be better laid down in the **bye laws**, that form part of the statutes but can be changed easier than the registered statutes.

³ Most countries made provisions for establishing *not-for-profit organisations* that respond in general quite well to the structure and culture of networks in the field of education and training.

3.3 The Selection and Type of Actors

A very important issue for both structure and culture of networks is the **selection of actors** of the network. While the target group of actors, clearly linked to the objectives of the network, is relatively easy to describe, the way in which actors can join the network is a matter of high importance and is often controversial among the initiators of a network. It is a matter of strategy how to reach best the objectives of the network and to fulfil the expectations of the actors (i.e. the initiators).

- In an **inclusive network** all actors fulfilling the description of the target group (as may be laid down in the statutes) can join, provided they subscribe to the code of conduct. Most scientific and professional associations are inclusive networks. In principle the number of actors may grow without limit in these networks.
- In an **exclusive network** actors are invited to join, following a well-known procedure (also laid down in the statutes), and the number of actors is deliberately limited.

It is clear that either case has consequences for the interaction among actors, their integration in the network, for the code of conduct, the trust and confidence, the stability and thus for the culture of the network.

Yet another important strategic issue is the **type of the actor**: is he/she a representative of an institution (a body) or is he/she an individual who only represents him-/herself? There are advantages and disadvantages with either choice and there may be also legal constraints involved at both sides (e.g. an international organisation, such as a UN agency, will not be able to join formally a network; individuals may not be eligible for collaborative contracting within the network). The individual actor may be highly respected and therefore contribute to the power of the network and enhance trust and confidence among the actors. An institution can also help to the prestige of the network, but if the representative is not at the same time an ambassador for the network in his/her institution (e.g. with respect to dissemination of information and co-operation potentials with other actors of the network), the effect may be very weak: it is the **interaction among actors** that counts. Strong ties among actors create “**solidarity**” and avoid “**isolates**” (actors who are not connected): these are important features to characterise “**excellent networks**”.

3.4 Interaction among Actors

Interaction among actors, obviously not random in networks, is the subject of “**social network analysis**”, a branch of sociology using ideas and tools of sociometry. The aim of social network analysis is to uncover the patterning of actors’ interactions or to find out how actors are “embedded” in the network, because it is believed that the success of societies and organizations often depends on the patterning of their internal structure.

An extensive formal theory, organized in mathematical terms, has been developed and systematic analysis of empirical data is undertaken. The specific terminology makes it easier to describe the features of the network. Sampling of the data is not done by survey techniques, but by census and thus not independent. It often relies on documents. It is easily understood that these data are difficult to gather. In what follows we will only briefly touch on this subject in relation to the performance of networks expressed by the number of actors and the intensity of the interactions through projects.

3.5 About the Management

Networks, being essentially democratic, non-hierarchic and voluntary, are self-governing organisations. Before starting up a network, once the network type or intensity is chosen, the target group of actors identified and basic objectives formulated, a feasibility analysis should bring about a few possible management models. The essential decision factors for these models are the internal and external resources available or expected. The internal resources available (from the initiators) may include, for instance: infrastructure for a secretariat and basic working expenditure (communication, consumables) and support in kind by means of secondment of personnel. Internal resources expected are fees or subscriptions paid by the actors as laid down in the code of conduct. The external resources available or expected from funding agencies are overheads from the project funding or, in rare cases, direct funding for the network management itself (Figure 2).

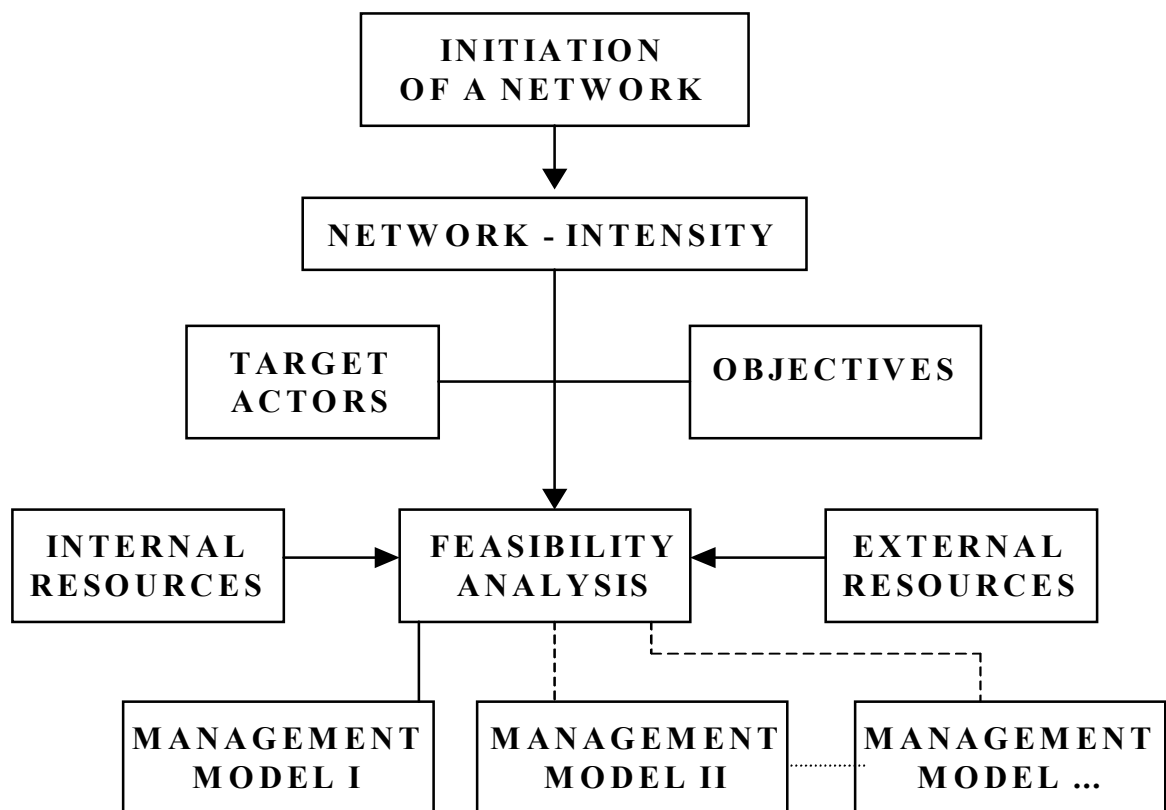


Figure 2. Initiation of a network and its feasibility analysis leading to some management models.

The management model that is finally chosen when the network is created should incorporate all these available resources, but should be adapted as resources may change along the life of the network (Figure 3).

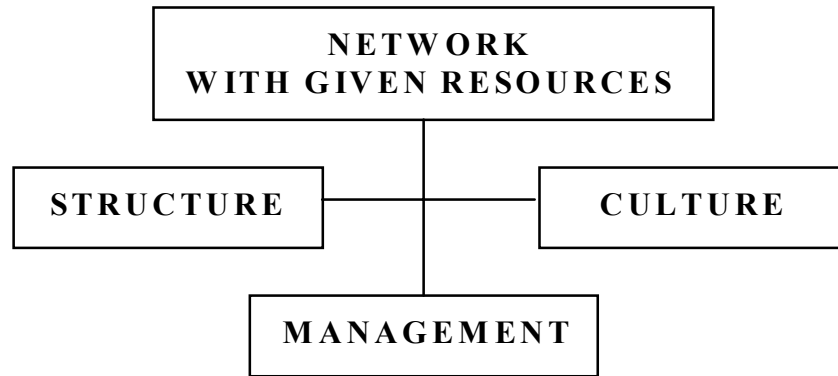


Figure 3. A network with its structure and culture, has a management adapted to its resources.

This requires a flexibility of the culture (code of conduct, strategy, etc) of the network and is, of course, more difficult when the network – intensity grows or changes, affecting the structure of the network. Thus, a feedback mechanism is required between culture, structure and management.

Management relies on people and a ‘manager’, commonly called the ‘**coordinator**’ of the network, and sometimes also called the ‘**facilitator**’. The latter title is more appropriate for a low-intensity network. Coordination implies a strong role in conducting managerial tasks and financial control of the projects. Decentralisation and delegation are of course techniques to be applied as appropriate, following a project-wise approach of the activities of the network (see next chapter).

There is no doubt that the competence of the coordinator or facilitator is crucial to the success of the network. The survey, discussed below, has indicated this clearly: he/she should not only have excellent communication and managerial skills, he/she should also be a strategic thinker. Depending on the resources available, the management models proposed should allow for alternatives with respect to affiliation of the coordinator/facilitator. A fully independent, competent person, not affiliated with any actor, would enhance the confidence within the network.

4. The Performance of Networks

4.1 Quality, Effectiveness and Efficiency

Why should people (or institutions) join a network with a given structure and culture? Or why should they decide to establish a network? Most people have a “wait –and -see” attitude until there are clear benefits of joining or establishing a network. Therefore the **performance** of a network is the ultimate convincing feature of networking: is the network effective and efficient? The general concept of “**quality assurance**” responds to this goal. The bottom line for quality in networking is its effect or impact after a certain period of time. In simplified form one could state:

Quality in networking is measured by its impact some time later

The term **effectiveness** describes how the network reaches the expectations of the actors. Since these expectations are often unwritten, it will be always difficult to assess, lest to measure quantitatively effectiveness. Moreover, are these expectations of the institutions represented in the network, or are they expectations of the persons representing the institutions? The best “quality measurement” would be the measurement of the degree of satisfaction by the actors of the network.

An alternative to such measurements is to initiate among the actors a process of regular “**self-assessment**”⁴. In a self-assessment process the network will first define a number of quality standards and given input resources, and the process- and output- characteristics of the networking. It will then use a number of appropriate methods in order to assess to what extent these quality standards and characteristics have been achieved.

Self-assessment may serve double purpose:

- first of all, through regular self-assessment the network will gradually come to understand better the effects and impact of networking activities performed and outputs delivered – and thus come closer to the real measurement yardstick of quality in networking;
- secondly, a good self-assessment process will find out strengths and weaknesses, yield many ideas and suggestions for quality improvement, which contributes to the development of a dynamic networking environment.

That, in itself will support the development of the network as a “*learning organisation*”: an organisation that has the intrinsic capacity to learn and develop as a whole – rather than as a set of individuals.

Let us compare “self-assessment” to “external assessment”, i.e. when the quality of networking is assessed by an independent “third party”, for instance a funding agency.

Advantages of an external assessment are:

- it has high credibility
- it ensures a neutral view and original perspective
- it allows comparability and benchmarking.

⁴ After Van den Berghe (2000): see Bibliography.

The most important disadvantages are:

- in general, it is very expensive
- assessors may not always be fully qualified to judge the activities of the network
- it may interact with other activities.

Self-assessment is when the actors are asked to assess the networking. The advantages of such actor assessment are:

- it meets the real interest of the actors
- it involves every actor
- it is cheap
- the real impact may be assessed (if undertaken at the right moment).

Disadvantages are:

- actor assessment often covers only some characteristics (depending on the involvement of the actors in several projects)
- the possibility of high variability of satisfaction of individual actors
- actors may not understand their own needs
- it may be subjective and therefore not be credible (inside and outside the network)
- it may lack rigour and reliability
- it may interact with other activities.

From a quality management perspective, self-assessment is the preferred way. Indeed, assessment by externals tends to focus on input- and output-characteristics of networking, while the real source of improvement lies in the internal processes. These can only be measured adequately through self-assessment. Moreover, any form of external assessment may lead to a defensive, rather than a constructive reaction of the people assessed. Quality improvement requires a positive motivation towards improvement. This is more easily supported by self-reflection than by external evaluation.

The term **efficiency** describes how the objectives have been reached with respect to the available resources. Criteria can be based on outputs and benefits. However, full-fledged cost-benefit analysis is very seldom, if ever, possible. **Performance indicators** are popular but have their limitations. One should not forget that in networking, the available resources are partly intangible, e.g. the reputation and expertise of actors, and important benefits as well are intangible, e.g. credibility, prestige, etc.

4.2 Some Performance Indicators

In what follows we will approach the efficiency of a network by using the number of actors and their involvement in projects. An essential feature is the **concept of projects**: whatever are the objectives of the network, any activity should be identified as a “project” for which a specific **partnership**, drawn from the total group of actors, is chosen. We may also call this partnership an **“internal coalition”** (called “*clique*” in social network analysis). Each project (or partnership) will encompass a set of objectives of the network, but not necessarily all objectives of the network.

The number of all possible undirected⁵ ties **T** among all actors **A** in the network is:

$$T = A*(A-1)/2$$

We can consider also the total number **N** of actors involved in all projects of the network. Let us call them “partners” involved in projects **P**, since some actors may not be involved. We can define the density Δ of the network as:

$$\Delta = N / T$$

The density Δ can be higher than 1 as will be shown below.

We now derive the Actor-Project-Integration index **API** of a network:

$$API = N / (A*P)$$

API is maximum 1 when all actors are partners in all projects P. The example in Table 1 illustrates the density Δ and the API index.

Table 1: Illustration of the density Δ and the Actor-Project-Integration index API.

	Project P1	Project P2	Project P3	Project P4
Actor 1	*	*	*	*
Actor 2	*	*		*
Actor 3	*		*	*
Actor 4				

for actors 1,2,3 and projects P1...P4:

$$\Delta = 10/(3*2/2) = 3,33 \text{ and } API = (3+2+2+3)/(3*4) = 0,83$$

for actors 1,2,3 and projects P1...P3:

$$\Delta = 7/(3*2/2) = 2,33 \text{ and } API = (3+2+2)/(3*3) = 0,78$$

for actors 1,2,3,4 and projects P1...P4:

$$\Delta = 10/(4*3/2) = 1,67 \text{ and } API = (3+2+2+3)/(4*4) = 0,62$$

for actors 1,2,3,4 and projects P1...P3:

$$\Delta = 7/(4*3/2) = 1,17 \text{ and } API = (3+2+2)/(4*3) = 0,58$$

Thus both the density Δ and the Actor-Project-Integration index API respond correctly to the number of actors (partners) involved in each project: adding an actor will only be “efficient” if he is involved in at least one project. A network with a large number of “sleeping” actors, - or “isolates” in the terminology of the social network analysis -, not involved in any project, would result in a low Δ or API. If there is only one project in the network, Δ is a better performance indicator than API since the latter will be likely equal to 1.

⁵ “undirected” can be the information flow between actors; mobility at the other hand is always a “directed” link since there is always a sending and a receiving actor.

The **international scale** of a network, often a criterion for networks funded by international agencies, can be defined by an **Actor-International-Integration index AII** :

$$AII = 1 - (C_e / A * C)$$

where A = number of actors,
 C = number of countries,
 C_e = number of eligible countries.

Thus the index AII increases asymptotically to 1 for an increasing number of actors and is highest when the ratio C/C_e equals 1.

Since the notion of “eligibility” does not always apply and the number of actors per country is also important, the **Actor-Country-Integration index ACI** is defined:

$$ACI = 1 - \{ \sum a_i - A / C \} / A$$

where $a_i \dots$ = the number of actors in country i ,
 A = total number of actors,
 C = number of countries.

$ACI=1$ if all countries would have the same number of actors in the network;
 $0 < ACI < 1$ for $\sum a_i - A / C < A$ and $ACI < 0$ for $\sum a_i - A / C > A$.

Another factor of efficiency is **the duration of the projects** in a network. The **Project-Duration-Index PDI** can help to express this feature:

$$PDI = 1 - D / (P * \sum D_i)$$

where D = time-span of the projects P ,
 $\sum D_i$ = sum of the durations of all projects,
 P = number of projects.

$PDI=0$ if there is only one project ($P=1$ and $D=\sum D_i$). PDI increases asymptotically to 1 for longer time-span of projects and for more projects. The example in Table 2 illustrates this performance indicator.

Table 2. Illustration of the Project-Duration Index PDI.

Year	Project P1	Project P2	Project P3	Project P4
1	*	*		
2	*	(*)	*	
3	*	(*)	*	
4			*	*
5				*

We calculate:

$$PDI = 1 - 5 / \{ 4 * (3 + 1 + 3 + 2) \} = 0,86 \text{ for projects } P1 \dots P4$$

$$PDI = 1 - 5 / \{ 4 * (3 + 3 + 3 + 2) \} = 0,89 \text{ for projects } P1 \dots P4 \text{ but } P2 \text{ has 3 year duration}$$

$$PDI = 1 - 4 / \{ 3 * (3 + 1 + 3) \} = 0,80 \text{ for projects } P1 \dots P3$$

$$PDI = 1 - 4 / \{ 3 * (3 + 3 + 3) \} = 0,85 \text{ for projects } P1 \dots P3 \text{ but } P2 \text{ has 3 year duration}$$

Thus this performance index PDI responds correctly to more projects with longer durations.

More performance indicators could be defined for other structural characteristics of networks, e.g. about the nature of the actors (enterprises versus universities) in the case of vertical networks.

Social network analysis is very much concerned about the position of actors within the network and uses such terms as *actor degree*, *closeness*, *betweenness* and *centrality*. Since we consider only “projects” when dealing with the performance of networks, it is sufficient for our purpose to investigate the number of times a given actor is present in a project-partnership.

Whereas the Actor-Project-Integration index API is a performance indicator for the whole network, we are looking here at an individual actor: how *close* or *isolated* is he? We also take the duration of the projects into consideration.

The individual **Actor-Project-Closeness APC index** is defined as follows:

$$APC = p * (\Sigma d_i) / P * (\Sigma D_i)$$

where p = number of projects in which the actor is partner,

Σd_i = sum of durations of the projects in which the actor is partner,

P = total number of projects in the network,

ΣD_i = sum of the durations of all projects P .

The actor is fully “isolated” if he is not involved in any project: $p=0$ and thus $APC=0$. The index is $APC=1$ if the actor participates in all projects: $p=P$ and thus $\Sigma d_i = \Sigma D_i$. Combining the examples of Tables 1 and 2, we can calculate:

$$\begin{aligned} & APC_1 = 1; APC_2 = 0,5; APC_3 = 0,5 \text{ for } P=4 \text{ and } D_2=1 \text{ year} \\ & APC_1 = 1; APC_2 = 0,54; APC_3 = 0,54 \text{ for } P=4 \text{ and } D_2=3 \text{ years} \\ & APC_1 = 1; APC_2 = 0,57; APC_3 = 0,71 \text{ for } P=3 \text{ and } D_2=1 \text{ year} \\ & APC_1 = 1; APC_2 = 0,44; APC_3 = 0,44 \text{ for } P=3 \text{ and } D_2=3 \text{ years} \\ & APC_4 = 0 \text{ for all cases.} \end{aligned}$$

Other performance indicators for actors could be defined, which introduce resources (human and financial) allocated to the different projects and actors. Since most projects of networks are cost-shared, this would imply also detailed information about the input of resources by each actor.

A common way to compare the performance of a network over the years or to compare different networks is the **trend analysis**: any variable or performance indicator can be plotted in a graph of the percent change from the reference year versus the percent difference from the mean as shown in Figure 4.

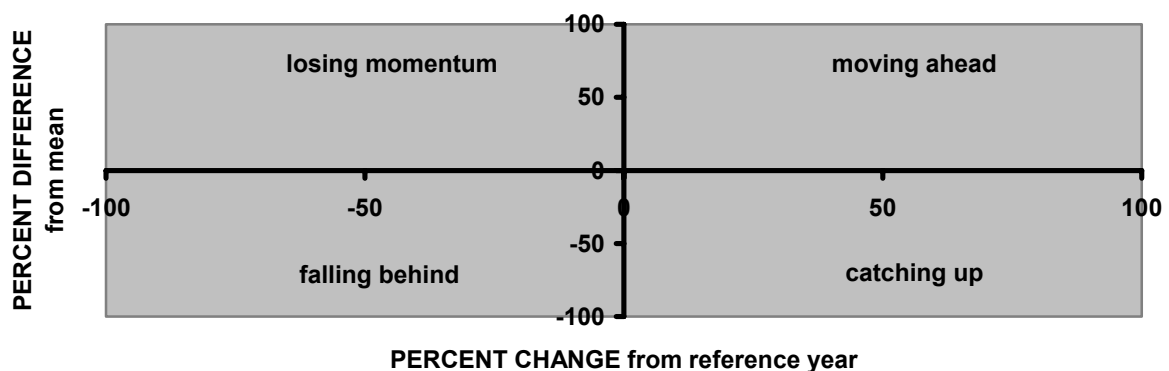


Figure 4. Trend analysis.

5. Results of a Survey on Networks

Experience suggests that “networks” is a buzzword and that many people may expect different outcomes and benefits of networks, sometimes contradictory with respect to the objectives of networks and the resources generally allocated to networks. The aim of the survey⁶ was an assessment of the general perception about networks, compared to the reality of existing networks. The survey was conducted through a questionnaire. In a few cases an interview was held with guidance of the questionnaire.

The questionnaire itself had two parts:

- 1) A THEORETICAL PART A exploring the perception of the participants concerning networks (principles, characteristics, objectives, expected outcomes and benefits, resources needed).
- 2) An APPLIED PART B (optional) where the participant identified a past or on-going network and filled in a series of similar questions applied to the identified network. An additional group of questions on “*Obstacles encountered*” was added.

The reader is referred to the Annex for this Questionnaire and to Van der Beken (2002) for the details about the survey, its questionnaire and its analysis. Below are presented only the most striking or interesting results. It would be interesting to repeat the survey with the same questions within the same target group some time later (e.g. in 2005).

Appraisal of PART A

Principles of Networks

There are important differences in opinion with regard to “*member⁷-bodies*” or “*member-individuals*”. There are also interesting comments regarding the long-term objectives or strategy beyond a project-life.

Characteristics of Networks

Many comments are about the structure of the network (non-hierarchical, decentralised).

Objectives of Networks

Somewhat surprising is the result for objective “*Dissemination, validation and exploitation of methods, techniques, research results and best practices*” at the level of EXECUTE: it receives the highest score; this means that the network should have the resources to act at this level. It is, however, not contradictory with the results of *Expected Outcomes and Benefits* and *Resources Needed*, because *Joint development of projects and activities among members* and *Project-wise funding by sponsors* receive the highest scores.

⁶ As said before, a SURVEY is not a “social network analysis”: it is the study of a sample and not a census. The “interaction among actors” was not investigated.

⁷ In this survey the term “members” has been used whereas in this report the more general term “actors” has been introduced.

Expected Outcomes and Benefits

While the highest scores are for *joint projects* and for *innovation*, the lowest score is for *increase of financial resources for members*. The added “other outcome/benefit” on *status, credibility, international recognition* is certainly worth mentioning in this appraisal.

Resources Needed

As may be expected for this important group of questions, the divergence of answers is the greatest of the whole part A: the highest score is for *project-wise funding* and the lowest is for *funding generated by selling products, expertise, services, etc....* *Registered status* receives a low score: this could be in many cases an “operational” inconsistency because “*project-wise funding*” at the “EXECUTE”-level will make a “*registered status*” of the network a necessity for funding by sponsors. But it is possible that some participants did not fully understand the meaning of the “levels of action” in *Objectives of Networks*:

- PROMOTE (or STIMULATE) is the lowest level of action by the network with respect to the given objective and thus requires the least resources;
- ENHANCE (or INCREASE) means that the network offers “help” to the MEMBERS WHO EXECUTE;
- EXECUTE (or PERFORM) is of course the highest level of action and would require the largest resources. For several objectives, there cannot be a role for networks at the level of EXECUTE.

An example: *Mobility of students/staff*: obviously it CANNOT be the network but the MEMBERS who perform, thus the level of action for the network is typically PROMOTE and ENHANCE, the latter e.g. by financing (through a project-wise funding) and by matching offers/demands (e.g. for training placements of students/young graduates). A similar reasoning can be given for objective *Transfer of knowledge, etc...*(in all its modes). Objective *Information flow, etc...* however, is a typical objective where the network can be performer and not only promoter or helper.

Appraisal of PART B

The overall results for Part B, compared to those of Part A, show a more realistic perception of network activities: co-ordinators and members are aware about the limitations of networks. But even more important is the clear message that the overall quality of action to reach the *objectives of networks* is not more than SATISFACTORY. The overall quality of the actual use of the *resources of the networks* is between SATISFACTORY and GOOD. Unfortunately, the results of the group of questions “*Obstacles encountered*” do not give an answer to this quality issue. **One can conclude that in general the quality of the identified networks is not well assessed by co-ordinators as well as by members.**

General Remarks, Observations and Suggestions

These comments are mainly related to **the characteristics and financing of networks and the role and profile of the coordinator or facilitator of networks:**

- The network should be *unique, creative and identifiable* and not identical to other networks. A network should offer the “yeast” for projects, but should not “manage” projects.
- A network is a “living organism” with members leaving and new members adhering all the time.
- The key for success is a network with members who share similar problems and objectives. It is very difficult to co-operate with enthusiasm when members have different motivations. A network will have more possibilities of success if the scope of the objectives is very clear and well defined: the scope of the network should be narrow but ambitious.
- A preferred and successful mode of operation in global and inter-country programmes has been and still is partnerships in which the partners share common objectives, pool resources (financial and human) and undertake periodic reviews. A major success-factor has been that the partners know and trust each other, and welcome constructive criticisms.
- It may be useful to consider a categorisation of networking ranging from dissemination of information to exchange of information to e-learning and project implementation.
- A minimum structural funding is necessary because project-funding alone will not allow for a high-quality service to members; projects will seldom involve all network-members and thus motivation of members will soon decline if not supported by services offered through the network.
- The *facilitator/co-ordinator* is the “machinist”: he/she must be competent with a vision, communicative with an open mind and unconnected as much as possible towards any network-member.
- The *facilitator/co-ordinator* should know the specificity’s, the constraints, the ambitions and the objectives of the network-members.
- Based on participation in several networks, one key success factor is the professionalism and communication skills of the *facilitator/co-ordinator*: he/she should be a strategic thinker, an articulate and encouraging communicator and able to communicate equally well with the community, government, corporate and academic sectors. He/she is very approachable, personable and, importantly, a recognised practitioner in the area of competence of the network.

6. GOUTTE of WATER - Global Observatory of Units for Teaching, Training and Ethics of WATER

GOUTTE of WATER is a project of Theme 5 "Water – Education – Training (W-E-T)" of the International Hydrological Programme (IHP) Phase VI (2002-2007) of UNESCO and is conceived to provide a coherent approach for UNESCO's IHP in the area of partnerships in the broad area of water-related capacity building. It follows the W-E-T Vision, presented at the 2nd World Water Forum in 2000, addressing four key areas of education, training and capacity building:

- Unity of education and research in higher education
- Facilitation of high intensity networks
- Quality assurance and assessment
- Raising public awareness as the obligation of water professionals and educators.

GOUTTE of WATER is an International Network for Co-operation and Exchange. GOUTTE of WATER will be a self-governing multi-modal vertical network, parity based and assistance oriented, stimulating education, training, research and innovation. It will act as a FORUM, PLATFORM and ALLIANCE for information and communication, for sustaining collaboration and exchange programmes, for extending geographical limited partnerships and facilitating new partnerships. It is an "observatory" which implies observation and follow-up of the networking activities of the actors in GOUTTE of WATER. It is also a vertical network with actors of different nature, i.e. not only universities, but all actors in the education, training, research and professional domain and the funding agencies are targeted. It is partly an inclusive network for the OBSERVERS and partly an exclusive network for the ASSOCIATES. The type of actor is:

- individual for the OBSERVERS
- institutional for the ASSOCIATES.

Among the targeted OBSERVERS are all those individuals with interest in active participation in networking, willing to join an existing network or preparing a new network and seeking actors to join and advice of best practice.

Among the targeted ASSOCIATES are the institutions with interest in the domain of environment-water and for instance active in the UNITWIN/UNESCO Chairs Programme as well as the institutions acting in the RENEW networks. Other targeted ASSOCIATES are the many networks in the environment-water domain, e.g. Cap-Net, ETNET, TECHWARE, etc.

The code of conduct of GOUTTE of WATER is essentially similar to those applied in the UNITWIN/UNESCO Chairs Programme and the RENEW Project. Given the low-intensity network, not much more is needed for GOUTTE of WATER because GOUTTE of WATER is not a CLUSTER nor a CONSORTIUM or PARTNERSHIP, but rather a mechanism to facilitate "breeding" these networks.

The proposed activities of GOUTTE of WATER need to be implemented through an appropriate management.

The **implementation strategy** should follow:

- the FORUM-philosophy for the bi-annual meetings and the *virtual forum*: an “agora” where OBSERVERS and ASSOCIATES exchange information and communicate to each other, discuss matters of common interest, exchange ideas which could lead to new projects among some actors, seek new partners, obtain advice and meet donors;
- the PLATFORM-philosophy where coalitions of actors, including funding agencies, possibly emerging from the FORUM, are preparing new programmes/projects or supporting on-going programmes/projects;
- the ALLIANCE-philosophy where existing networks, sharing the same objectives, help each other and e.g. extend their partnership.

The **implementation mechanism** is by:

- promoting and making visible GOUTTE of WATER;
- identifying actors as potential OBSERVERS or ASSOCIATES;
- preparing and organizing the FORUM activities (both its bi-annual meeting and the *virtual forum*) as a first step;
- inviting all actors, including funding agencies, to attend the FORUM activities;
- inviting actors to contribute to the other activities.

A **facilitator**, supported by the Secretariat of the International Hydrological Programme, will be responsible for the implementation mechanism but the implementation strategy is largely the responsibility of the actors themselves: therefore GOUTTE of WATER is a “self-governing” network and especially its PLATFORM and ALLIANCE mode of operation is their activity.

Financial implications for the management of GOUTTE of WATER are to be determined project-wise, i.e. for each activity a budget must be proposed and funds made available.

Each of the activities listed below could be considered as “*projects*”. It is not necessary that all projects are developed and operational in this order or at the same time.

- Providing a useful classification of co-operation and networking activities through definitions and general outlines.
- Providing recommendations for efficiency and quality assurance of co-operation schemes and networks.
- Organizing bi-annually an open FORUM with lectures, workshops, posters, seminars and a « network market ».
- Organizing a permanent VIRTUAL FORUM for GOUTTE of WATER participants.
- Facilitating mutual assistance among associate- and observer-members.
- Helping to set up expert teams for education and training needs analysis upon request of donor agencies and beneficiaries.

7. Suggestions and Examples

7.1 Suggestions for Best Practice

The aim is not to impose the ultimate guidelines for a network, but to enlighten the concepts explained in this report and to exploit the lessons learned from the survey on networks. As said in a recent report on WaterNet, one of the examples below, networks are context-specific, location-specific and region-specific. It is not possible to replicate existing networks elsewhere. However, clear definition and characteristics of the network envisaged are always and everywhere the very first steps for success.

When creating a network

About the typology of the network:

- **Define the type of network depending on the network-intensity.**
 - *A. a **FORUM (market-place, agora):** a regularly organised meeting where information and ideas are exchanged and discussion can be freely engaged; nowadays this forum-type of interaction among actors is often complemented by a “virtual forum” through Internet.*
 - *B. a **PLATFORM:** a group of actors that supports an existing programme/project or plan a new programme/project; such an interaction could be the outcome of a forum.*
 - *C. an **ALLIANCE:** a more or less diffuse link between actors or between several networks, whatever their type, with common objectives.*
 - *D. a **CLUSTER:** a group of actors or partnerships which shares common support structures and seeks to exploit complementary characteristics of the group or results of projects.*
 - *E. a **PARTNERSHIP** or **CONSORTIUM:** a group of actors executing a project of limited duration.*
- **Define the network as “multi-modal” (e.g. types A+B+E) or “uni-modal”(e.g. type D only).**
- **Does the network follow a bottom-up or a top-down approach or a combined approach?**

About the structure of the network:

- **Define the target group of actors and the objectives of the network.**
- **Is it a horizontal or a vertical network?**

- Is it an inclusive or an exclusive network?
- Are the actors representatives of bodies or individual persons? Or are both accepted?

About the culture of the network:

- What are the initial expectations of the actors?
- What is the initial strategy to achieve the objectives of the network?
- Write a code of conduct.
- Write statutes and bylaws if there is a need for it and register if appropriate.

About the management of the network:

- Conduct a feasibility study about the management model, given confirmed and expected resources.
- Define the role, profile and selection procedure of the facilitator or coordinator of the network.
- Define appropriate management infrastructure and other resources.

When developing and operating a network

About effectiveness:

- Describe the factors of actors' satisfaction.
- Organise regularly a self-assessment procedure among the actors and define strengths and weaknesses.
- Adapt initial objectives and strategy.

About efficiency:

- Develop and apply management rules but avoid bureaucracy.
- Define and list all projects of the network.
- List output criteria of projects and apply.
- Develop and apply performance indicators.
- Conduct cost-benefit analysis where possible.

About survival and termination:

- **Balance carefully the “own resources” (actors’ support to the network) and the input resources (project funding and other income) with the output costs (management and project costs).**
- **Inform all actors as much as possible about effectiveness, efficiency and budget issues.**
- **Terminate the network if the quality of the management of the network decreases due to an imbalance of the budget.**

7.2 Examples of Best Practice

Applying the ‘Suggestions for Best Practice’ as derived from the study and survey on networks, a series of ‘examples of best practice’ are presented. Members of the “community of practice” on networks for W-E-T suggested these examples, but this by no means implies that only these examples could be labelled as ‘of best practice’. Many other networks in the water domain could rightly find a place in this list of examples, obviously biased by the small size of this “community of practice”.

As a matter of fact, GOUTTE of WATER, discussed above, aims to enlarge, as much as is possible, this ‘community’. Being an ‘observatory’ for networks, GOUTTE of WATER aims at observing networks of best practice, and in doing so, will assist other networks and help to create new “excellent” networks.

The list of examples of best practice has been ordered chronologically with respect to the first year of operation of the network.

Example A: ICP – Interuniversity Cooperation Programme in Hydrology and Water Management (1989-1997).

• Typology

Primarily a PARTNERSHIP executing a project of limited duration, the network has acted from the beginning also as a FORUM and a PLATFORM, being at the origin of the networks of examples B and C below.

Thus, the ICP was a multi-modal network, established by a combined bottom up/ top down approach through the funding of the ERASMUS Programme for cooperation in higher education of the European Commission (EC).

• Structure

The actors were universities with the only objective of transnational student and staff mobility. Hence, the network was horizontal and inclusive with persons formally representing their universities, confirmed by a letter signed by the head of the university.

• Culture

The objective was clear and unequivocal, and thus easily understood. All participating actors, willing to send or to receive students and to promote mobility of staff, adhered to this objective. The strategy of the inclusive network was to encompass university departments active in water management and hydrology in all eligible countries.

All actors had to apply the rules, including financial rules set by their respective universities, national authorities and the EC for eligibility of expenditure. There was no need for the formal establishment of the network with statutes.

• Management

The coordinator initiated the project by visiting potential actors in five different countries, funded by a preparatory grant from the EC in early 1988, and ran the network through annual contracts between the EC and his university. His duties included:

- Organising an annual meeting of all actors for preparing student and staff mobility;
- The refunding of expenditure from staff mobility according to the rules set out by the EC;
- Preparing annually a renewal application estimating expected staff and student mobility for the forthcoming year;
- Reporting annually to the EC on both academic and financial aspects of the contracts.

This annual reporting was straightforward because the contract was simple: the student mobility grants were allocated to the sending universities through their national authorities and paid to the students by the central administration of the sending university. The approved annual budget covered only the staff mobilities and meetings. Actors were NOT expected to contribute to the budget, thus accounting was 'unilateral'. The coordinator's university

received the full budget that would then be used for the direct refunding of the expenditure of all actors according to the rules. The coordinator was viewed rather as a ‘facilitator’ because he had no monitoring role at all, neither in the student nor in the staff mobilities (which included, besides teaching, also the monitoring of the students). Mobility was essentially a bilateral agreement between sending and receiving actors, prepared at the annual meetings.

• Performance

The effectiveness of the network was primarily based upon its FORUM-mode: the annual meetings of all actors were essential for successful student and staff mobilities during the ongoing academic year and forthcoming years. A self-assessment report among the actors was a regular feature of the reporting to the EC.

*The ICP is the best thing that could happen to my institution whose level of international exchange was almost non-existent.
Now, we have very good relations with our colleagues in Europe.*

The network was steadily expanding and allowed for a PLATFORM-mode: indeed, it was the incubator for several other networks, among them the Examples of Best Practice B and C described below. Since these networks had fully different structure and culture, there was no competition between them, and many actors were successful partners in the three networks. An important factor in these FORUM/PLATFORM-modes of the network was the quarterly publication called “PANTA RHEI” (*everything flows*), published from September 1989 till March 1994. Lack of funding was the reason for stopping this free publication. Information and communication flow was resumed in February 1996 through a weekly Email and a website.

The efficiency of this network can be measured using some of the performance indicators proposed above. Table A.1 gives the essential data of

- the total student-mobility flows between countries over the whole period 1989-1997 both in terms of numbers of students and in terms of the duration of the mobility;
- the total staff mobility in terms of numbers and in terms of duration.

In this example the number of eligible countries C_e is 19 throughout, but 18 in the last year when Switzerland was no longer eligible in the ERASMUS Programme.

The **Actor-Country-Integration index ACI = 0,3896** was calculated for 44 actors in 14 countries with participations ranging from 1 to 8 universities per country. The **Actor-International-Integration index AII** was calculated per year regardless the actual participation in the activities: AII has reached its maximum in 1994-95 and stays constant in the following years. However, both the **density Δ** and the **Actor-Project-Integration index API** are declining for budgetary and external reasons: Δ in % and API are calculated for the staff mobility only in Table A.1.

Table A.1 The ICP “HYDROLOGY and WATER MANAGEMENT”.

Ac.Year	Actors	Countries	Student Mobility			Staff mobility			API	Δ in %
			All	Number	Months	Number	Weeks			
1989-90	9	7	0,698	4	16	2	7	0,222	4,76	
1990-91	21	8	0,887	12	59	4	8	0,19	7,14	
1991-92	27	10	0,93	22	138	8	8	0,296	8,89	
1992-93	36	12	0,956	40	250	15	15	0,417	12,4	
1993-94	38	12	0,958	49	364	22	22	0,579	18,2	
1994-95(1)	42	14	0,968	63	516	10	10	0,238	5,49	
1995-96(1)	47	14	0,971	108	788	13	14	0,276	7,14	
1996-97(2)	45	13	0,969	76	437	5	5	0,111	3,2	

Notes: (1) staff mobility decreased due to budget restriction. (2) CH is no longer an eligible country and the uncertainty of the new SOCRATES/ERASMUS procedures hampers the mobility's of both students and staff.

The ICP ‘Hydrology and Water Management’ (ICP-B-1138) was one of the largest networks amongst more than 3000 ICPs. The termination of the network was decided by the EC because the new SOCRATES Programme, from 1996 onwards, ‘institutionalised’ all student and staff mobilities directly towards the central levels of the universities, without a bottom-up approach at department level. This change of policy had already been announced by budgetary restrictions for the ICPs in 1994-1995 onwards and resulted in a decrease of mobilities as shown in Table A.1.

• Appraisal

This network was a success because it had a clear unique objective with highly motivated actors of the same nature. The satisfaction of both staff and students was very high. Thanks to the bottom-up approach at department level, the network showed a strong coherence with high participation at the annual meetings. The management was easy with a simple contract and funding on a long-term basis within a well-structured programme.

What gives me the greatest satisfactions are the career achievements of those students whom I have encouraged to participate in an ERASMUS exchange.

Example B: TECHWARE (TECHnology for Water REsources) (1990 - ongoing)

• Typology

A multimodal network acting in the FORUM-PLATFORM-ALLIANCE and PARTNERSHIP –modes. It is a vertical network comprising universities, research institutes, public institutions (administrations and regulators, such as national environmental agencies), public and private water companies, consultants, scientific and professional organisations and other networks. TECHWARE was initially established by a combined bottom-up/top-down approach through funding of the COMETT Programme (1987-1995) for University Enterprise Training Partnerships (UETP's) of the European Commission (EC).

• Structure

The target group of actors are all stakeholders in the water sector with the general objectives of:

- facilitate European co-operation in a multi-disciplinary perspective for all water-related activities;
- network people effectively;
- enhance research co-operation and the exchange of scientific knowledge;
- foster industry-university co-operation.

This inclusive network is present in mostly European countries and comprises universities, public administrations and agencies and private companies, consultants, professional associations and other networks. The actors are representatives of legal bodies.

• Culture

This multi-modal vertical network has many actors with large, divergent expectations. The 35 initiators from 11 countries in July 1990 laid down the Statutes of an international non-profit association, registered in Belgium.

The Statutes define typically the objectives and the role, power and election procedures of:

1. The General Assembly of all members;
2. The Board of Management;
3. The President of the Association, etc.

The Bye Laws describe the organisational structure and management.

• Management

The internal resources comprise office facilities of the host of the legal seat of the association as well as office facilities of the host of the operational bureau. The Statutes/Bye Laws define the role of a Secretary General and of a Co-ordinator. Two auditors among the members are

appointed annually by the General Assembly and they report about the financial accounts at the next General Assembly.

• **Performance**

TECHWARE has been very successful for:

- Transnational training placements of students and young graduates in industry (a total of more than 600 placements were organised and financed);
- Short courses for professional development (a total of more than 70 courses were financed);
- Development of training tools, especially computer-aided-learning tools and through internet;
- Pilot-projects and surveys for continuing education and training.

TECHWARE ran also a large research-training project with 20 mobilities of young researchers spending at least 6 months in another laboratory.

It analysed research needs and defined research policies on behalf of the European Commission.

It made studies and organised workshops for the World Health Organisation and supported in several ways projects in developing countries funded by the World Bank and other agencies.

At the peak of its life TECHWARE counted 198 member bodies in 30 countries. At the present TECHWARE counts 60 members in 20 countries: the drop is the result of the changing funding policies of the European Commission:

- Training placements are now only funded through national organisations and a transnational network as TECHWARE has no role anymore;
- Short courses are no longer eligible for funding.

TECHWARE continues its activities in FORUM-PLATFORM modes and les in PARTNERSHIP mode as a contractor. It supports the LATEST NEWS/KeyWATER internet activity of ETNET21 (see Example E below) as its main information and communication vehicle among the members.

- **Website** <http://www.techwarenet.org>

• **Appraisal**

TECHWARE is a rare example of a large vertical multidisciplinary network between academia and non-academia. Its sustainability is highly dependent on the funding mechanism for projects (PARTNERSHIPS) with clear benefits for the participating actors.

TECHWARE has generated and still generates many internal and external coalitions among the actors, which would never exist without the networking activities of TECHWARE.

Example C: EWA-Ring – Interuniversity Coordinating Forum for East-West Cooperation in the Area of Environment, Water and Agricultural Soils (1991-1994)

- **Typology**

Network operating as a PARTNERSHIP, established in a combined approach. It acted also in a PLATFORM-mode for transferring of know-how and initiating new education, training and research collaboration.

- **Structure**

EWA-Ring was a Joint European Project (JEP) of the EC-Phare Tempus programme. The target group consisted of university staff and students in Poland, Czech Republic, Slovakia and Hungary. It was a horizontal network where actors were academic units: 16 departments from 4 Central European countries and 9 departments from 6 European Union (EU) countries.

- **Culture**

EWA-Ring JEP concentrated its efforts to create a European self-coordinating forum of university departments cooperating in teaching, training and related activities in the areas of environment, water and agricultural soils. The underlying idea was to avoid duplication of the efforts, to facilitate the development of joint educational, training and mobility programmes involving a number of universities from several Central European countries.

The multiple task of EWA-Ring was initiation and preparation of comprehensive programmes for future cooperation. In fact it laid down the sustainable foundation for future cooperation and it initiated several spin-off JEPs, some still on-going.

- **Management**

EWA-Ring was funded by the Tempus programme of the European Commission (the main financial source) for three years from 1991 till 1994. The general management of the project was the task of the Annual General Assembly (decision making structure). Wageningen University, NL was the coordinating university. National sub-centres of the EWA-Ring were created in Poland, Hungary, Czech Republic and Slovakia. The personnel expenses associated with the direct coordinating work were provided by the Tempus programme and partially by the coordinating university.

- **Performance**

EWA-Ring consolidated the East-West European forum mainly through staff and student exchange. In total 168 teaching staff members from Central European countries carried out retraining visits to EU universities. The aim of these visits was to learn about new techniques and concepts related to the subjects of EWA-Ring, study programmes, multimedia teaching techniques, expertise of EU universities etc., as well as to formulate specific proposals for the following years; 61 teaching assignments from EU universities to Central Europe partners stimulated the exchange of knowledge and enabled in-depth insights into problems facing the targeted partners. The updating of university curricula and training was strengthened with student exchanges in both direction: 161 student mobilities were performed in total.

Besides the staff and student exchange, EWA-Ring organised also short intensive, high level courses and workshops for graduate students and staff. In total 7 courses and seminars were performed in the second and third year of the EWA-Ring.

Essential part of EWA-Ring performance was upgrading and improving of laboratory and communication facilities of target partner-departments.

- **Appraisal**

The impact of EWA-Ring 10 year after can be best evaluated by the fact that 22 new proposals were submitted for EU funding, out of which 18 were successful.

Example D: WUP – Water Utility Partnership for Capacity Building in Africa (1995 – ongoing)

- **Typology**

The WUP operates as a multi-modal FORUM, PLATFORM, CLUSTER and PARTNERSHIP network. The network follows both the bottom up approach as well the top-bottom approach.

- **Structure**

The WUP is a joint programme initiated by the Union of African Water Suppliers (UAWS) – Abidjan, Cote d'Ivoire, and the Regional Centre for Low Cost Water and Sanitation (CREPA), Ouagadougou, Burkina Faso and the Centre for Training Research and Networking for Development (TREND) – Kumasi, Ghana. Though established in 1995, the programme was launched in 1996 with the support of the World Bank. The basic idea leading to the creation of WUP is to build a partnership among African Water Supply and Sanitation Utilities (WSSUs) and other key sector institutions, to create opportunities for the sharing of experiences and capacity building. The Water Utility partnership seeks to achieve the above objectives through five different but very closely linked projects.

The target group of the actors are the **urban water utilities** in Africa. Water Utilities in this respect refers to any organisations that is charged with the responsibility of providing water and/or sanitation services to **urban areas**. This includes government departments, municipalities, parastatal or public companies as well as private companies. The WUP thus can be qualified as a **horizontal network**.

- **Culture**

The strategy to achieve the above mission the WUP is to address three critical factors on provision of water and sanitation services:

- Facilitating reforms of the water sector
- Improving operational efficiencies through innovation of practices and promotion of good practices
- Build capacity of utilities to provide water and sanitation services to the urban poor.

The initial expectations are related to capacity building of utilities, particularly concerning how to address the common issues of cost recovery, institutional reforms, operational efficiencies and provision of water and sanitation to the urban poor in Africa.

The target of the WUP is to operate in all countries in Africa without any exclusion. On this basis the WUP is an **inclusive network** seeking to cover the whole continent. The actors are the representatives of the Water Utilities bodies. The WUP is not a membership network but, as stated above, works as a programme seeking to address specific issues on provision of water and sanitation services in Africa.

All utilities are free to participate in the activities of the WUP. There is no particular code of conduct for those that participate. The participants are mainly individual persons who get hired by the network. Some times the participants have to pay for their participation in some of the WUP activities but it is not always the case.

- **Management**

WUP is supported by UAWS (UADE) and shares its facilities. The network is run by a lean secretariat comprising the managing director, an assistant and the manager for finance and administration. The role of the management is basically coordination of the activities that seek to promote the programme. The basic idea is that none of the projects should be implemented in isolation, hence the WUP secretariat ensures linkages of the projects.

The WUP is financed by various donors including DfID (from the UK), the Netherlands Government, the French Government, the Union of African Water Suppliers and the Swedish Government. Most of the funding goes through the World Bank.

- **Performance**

Project 1: Facilitating reforms in the water and sanitation sector in Africa

Project 2: Performance indicators and benchmarking of African Water Utilities

Project 3: Utility management and reduction of unaccounted water

Project 4/5: Building capacity of water utilities in Africa to provide water and sanitation services to the urban poor.

The network usually organizes self-assessment programmes. The last one was held in November 2001.

- **Website:** <http://www.wupafrica.org>

Example E: ETNET (European Thematic Network of Education and Training for Environment Water (1996-1999) and ETNET 21 (2000 – ongoing)

• Typology

ETNET and its successor ETNET21 is a vertical and multi-modal network operating as a FORUM, PLATFORM and a PARTNERSHIP.

• Structure, Culture and Management

The general objectives of the thematic networks funded by the SOCRATES/ERASMUS Programme of the European Commission are:

- To provide a global forum and to build on existing partnerships between academia and non-academia interested in education and training;
- To organise a standing conference where topics of mutual interest can be freely and easily proposed and discussed in an efficient way;
- To foster the development of joint programmes and projects;
- To promote intensive interdisciplinary cooperation.

ETNET translated these objectives into five specific projects dealing with:

- postgraduate studies in hydrology and water management;
- PhD education and advanced research training;
- Open and distance learning;
- Continuing professional development programmes;
- European paradigm of integrated water management.

ETNET21 has the general theme *“The relation between education and research within a perspective of lifelong learning”* and develops specific projects on:

- Teaching resources;
- Distance learning opportunities;
- Virtual laboratories;
- European platform of doctoral students and young scientists;
- Quality assurance, dissemination and sustainability.

The actors are representatives of the institutions adhering to the thematic network. The coordinator’s university is the contractor with an annual budget, which is managed through the core-partners (the team-leaders of the specific projects). A plenary assembly of all actors is held annually. Since the grant of the EC is only a percentage of the total approved budget, all actors, through their institution, are requested to contribute with “own resources” to the network. This rule, together with the EC-rules of eligible expenditure, makes the network management quite complicated.

• Performance

For the sake of this example, the following projects of ETNET21 are identified:

- a. Information and communication, through the newsletter LATEST NEWS (LN) and the website KeyWATER(KW);
- b. Survey on networks;
- c. Specific Project SP-I on teaching resources;
- d. Specific Project SP-II on distance learning opportunities;
- e. Specific Project SP-III on virtual laboratories;
- f. Specific Project SP-IV on European forum for doctoral students and young scientists;
- g. Specific Project SP-V on quality assurance, dissemination and sustainability;
- h. Plenary Assembly PA2001;
- i. Plenary Assembly PA2002.

The results in terms of the **Actor-Project-Integration index API** are shown in Table E.1 for the activity years 2000-2001 and 2001-2002. In the second activity year several “sleeping” actors were dropped and some new actors joined. Thus the number of actors decreased but the performance indicator API increased from 0,288 to 0,322 because more actors were active (partners) in several projects.

Table E.1 The effect of “sleeping” actors in the living example of ETNET21.

Projects (1)	Number of active actors in 2000-2001	Number of active actors in 2001-2002
LN/KW	72	66
Survey		6
SP-I	13	30
SP-II	8	10
SP-III	6	10
SP-IV	10	5
SP-V	4	22
PA2001	32	
PA2002		21
Number of actors A (2)	72	66
API	0,288	0,322

Notes: (1) several projects generated “external coalitions” and the Plenary Assemblies were attended by people not acting in the network, but these are not taken into account in the calculation; (2) actors are institutions in ETNET21 and only the number of institutions is given in this Table; the actual number of individuals or contact persons are many times higher in several projects, e.g. LN/KW is distributed to 438 individuals.

Website <http://etnet.vub.ac.be>

• Appraisal

The thematic networks are extremely useful tools in a given discipline or domain and perform efficiently in the FORUM and PLATFORM modes. ETNET and ETNET21 formed since 6 years unique opportunities to bring together academia and non-academia to discuss issues and future developments of the education and training in ENVIRONMENT-WATER.

Example F: WaterNet- Capacity Building Network for Integrated Water Resources Management (2000- ongoing)

- **Typology**

WaterNet is a horizontal network operating mainly in the FORUM-, PLATFORM- and CLUSTER- modes established in a combined top-down/bottom-up approach.

- **Structure**

WaterNet is a membership organisation. The WaterNet members meet during the Annual General Meeting (AGM). The first WaterNet AGM, held in Maputo, Mozambique on 3 November 2000, approved the Constitution of WaterNet. The AGM elects members unto the Steering Committee who oversees the WaterNet Secretariat. The University of Zimbabwe currently hosts the secretariat.

Membership of WaterNet is open to institutions in Southern and Eastern Africa that are involved in training, education and research in fields directly related to Integrated Water Resources Management, preferably at graduate and post-graduate level. The primary requirement of a member is to subscribe to the principles of Integrated Water Resources Management (IWRM), to commit itself to further IWRM through sharing expertise and facilities with other members, to actively contribute to the development and maintenance of selected course modules, and to allow peer review.

WaterNet wishes to be an ‘inclusive’ organisation, and at any moment new members may join the network. Membership application forms can be obtained from the WaterNet Secretariat (send email to: waternet@eng.uz.ac.zw).

WaterNet also has ‘supporting members’. These currently include the Global Water Partnership-SATAC, the Netherlands and Swedish governments (financially supporting WaterNet) and IHE Delft (facilitating the establishment of WaterNet).

There are currently 35 members from 12 countries in Southern and Eastern Africa.

- **Culture**

The Mission of WaterNet is to enhance regional capacity in Integrated Water Resources Management through training, education, research and outreach by sharing the complementary expertise of its members. WaterNet member institutions have expertise in various aspects of water resources management, including water supply, sanitation, groundwater, wetlands, irrigation, water law, water economics, community based resource management, flood forecasting, drought mitigation, water conservation and information technology. These institutions are based in Botswana, Kenya, Lesotho, Mozambique, Namibia, South Africa, Tanzania, Uganda, Zambia and Zimbabwe

WaterNet aims at strengthening the overall human and institutional capacity of the Water Sector in Southern Africa in order to contribute to the wise use of water resources. The wise use of water can be translated in technical terms (efficient use), socio-political terms (equitable use) and in environmental terms (ecologically sound use).

The immediate project objectives are as follows:

- To raise awareness with regard to the regional scale of IWRM among institutions and people active in this field;
- To stimulate regional corporation in the field of education in IWRM by developing a modular Master's Programme to which several institutions in the region contribute;
- To increase accessibility to training and education in IWRM for the participation from the Southern African Region;
- To stimulate, regionalise and strengthen research in the field of IWRM in the Southern African region by offering opportunities to perform joint research.

• **Management**

Governance of WaterNet is through the Annual General Meeting and the Steering Committee. The Annual General Meeting is composed of all Members and Supporting Members, and is the overall governing body of WaterNet. The Annual General Meeting meets once every year. The Steering Committee is comprised of five persons representing the AGM and elected at the AGM, one person appointed by the SADC Water Sector, one person appointed by the institution hosting the WaterNet Secretariat and three persons elected by the Supporting Members. The Steering Committee meets twice a year.

Day to day management is through the WaterNet Secretariat consisting of a Manager, an Administrator and an Advisor.

• **Performance**

WaterNet and Education in Integrated Water Resources Management

A central activity of WaterNet is the establishment of:

1. An education programme of short and professional courses in IWRM.
2. A Masters Degree Programme in Integrated Water Resources Management.

This is the first time that universities of the region decided to offer joint educational programmes in water resources.

Short professional courses in IWRM

These courses are started in October 2002 in Dar es Salaam, Tanzania. More information will soon be available.

Masters Degree Programme in Integrated Water Resources Management

A central activity of WaterNet is the establishment of a Masters Degree Programme in Integrated Water Resources Management. Students will obtain a master degree consisting of modules taught at different universities in the network as well as a dissertation project. The Universities of Dar es Salaam and Zimbabwe offer the Master programme since the beginning of 2002.

One of the main objectives of the post-graduate programme is to coin a common language of the central concepts in Integrated Water Resources Management. This will allow present and future water managers to effectively communicate with experts from other disciplines, such as resource economists, environmentalists, lawyers, planners, community representatives, scientists, health professionals, engineers etc.

In the post-graduate programme, institutions contribute and share their comparative strengths in water-related expertise. In this way it is possible to offer a high quality comprehensive course programme in a relatively short time. Pooling expertise is seen as the most efficient method towards a course programme that is truly inter-disciplinary, encompassing all the important aspects of Integrated Water Resources Management. The degree programme will help to enhance the capacity to deal with cross-border issues of some of the weaker countries in the region.

Annual Water Symposia

WaterNet will hold Annual Water Symposia, jointly organised with the Water Research Fund of Southern Africa (WARFSA). These Symposia are meant to be a platform for water professionals in Southern Africa, where advances in research and education related to Integrated Water Resources Management are presented. It is the place to discuss new opportunities and developments towards the integrated management of our scarce fresh water resources. It is also the place where we should attempt to cross boundaries: look over disciplinary fences and think across national borders.

The First WARFSA/WaterNet Symposium entitled "*Sustainable Use of Water Resources; Advances in Education and Research*" was held in Maputo, Mozambique from 30 October to 3 November 2000.

The Second WARFSA/WaterNet Symposium on "*Integrated Water Resources Management: Theory, Practice, Cases*" was held in Cape Town, South Africa, on 30 and 31 October 2001. All papers are available (downloadable) in electronic format.

The Third WARFSA/WaterNet Symposium entitled "*Integrated Water Supply and Water demand for Sustainable Use of Water Resources*" was held in Dar Es Salaam, Tanzania on 30 and 31 October 2002.

- **Website** <http://www.waternetonline.org>

- **Appraisal**

WaterNet is at a crucial phase of development. The first two years (2000, 2001) were strongly focussed on the participatory process of establishing a member owned, demand driven, credible and relevant network. Objectives were translated into tangible activities, which were set in motion, and strong emphasis was put on launching the WaterNet Flagship; the Regional Masters Programme in IWRM. In 2002, all WaterNet windows of capacity building were fully operational (Fellowship Fund, staff Exchange Fund, Nodal Strengthening Fund and Staff Development Fund). 2003 sees the implementation of the Masters programme at the universities of Dar es Salaam and Zimbabwe.

Example G: EWASIA – Development of an International MSc Programme on Environment and Water Resources Management in Central Asia (2002-ongoing)

- **Typology**

Network operating as a PARTNERSHIP and in a PLATFORM-mode, established in a combined approach. It will act mainly as platform for transferring of know-how and initiating a new education, training and research collaboration.

- **Structure**

EWASIA is a Joint European Project of Tempus-Tacis programme (2002-2006), funded by the EC. The target group consists of university staff and students in Uzbekistan, Turkmenistan, Tajikistan and Afghanistan (Amu Darya river basins). Actors in this vertical network are both representatives of universities, government bodies, international organisations, research and consultancy institutions and individual experts. The total number of actors is 20, originating from 8 countries (6 from EU, 1 from US and 13 from Central Asia).

- **Culture**

The initial strategy is assessment and elaboration of a new, internationally recognised MSc programme and capacity building (training of teachers, the creation of an International Master School Unit in Tashkent and the procurement of equipment).

The Long-term strategy is to extend cooperation with target groups and actors from Kazakhstan and Kyrgyzstan (Syr Darya river basin) in order to establish the international MSc program for the whole Central Asia region (Aral Sea Basin)

- **Management**

EWASIA is proposed for financial support from Tempus program of European Commission (main financial source). Wageningen University, NL will facilitate the project secretary office, which is main legal responsible (project contractor). Tashkent Institute of Irrigation and Agricultural Mechanisation Engineers in Tashkent will act as project coordinator.

The general management of the project will be the task of Annual General Assembly (decision making structure). The participation will be the contractor, coordinator and contact person from the consortium member institution and individual experts. To ensure the regional cooperation and stimulate the dialogue between the Countries in Central Asia it is envisaged

to introduce the function of chairman of General Assembly which will be elected and belong to different country each year.

A Steering Committee (operational structure), appointed from staff of target institutions, will be responsible the on-going implementation of activities. All actors will be involved in the implementation of activities with accordance to theirs specialisation.

• **Performance**

To achieve the main objective the following activities are planned:

1. Assessment of existing curricula and training needs, elaboration of the MSc programme curricula, development of courses and distance learning methodology.
2. Institutional capacity building through the creation of the International Master School in Uzbekistan, training of staff and procurement of equipment.
3. Pilot MSc student training.
4. Development of the Network PLATFORM in Central Asia on Environment and Water Resources Management to improve regional cooperation.
5. Quality control and assessment of the new developed MSc programme.

Example H: FETWater – Framework Programme for Education and Training in the Water Resources Sector of South Africa (2003-ongoing)

- **Typology**

FETWater is a vertical multi-modal network, operating in FORUM, PLATFORM and PARTNERSHIP modes. It started off with a pilot network, thus a top-down approach, but will move in time to a bottom-up approach by calling for proposals by networks. A bottom-up approach will realise once sufficient funding resources could be secured.

- **Structure and Culture**

The actors consist of partners from the education and training sector (universities and technikons), the research and development sector, the private sector (professional service providers) and the public sector (Department of Water Affairs and Forestry). The first pilot network under the auspices of FETWater will be an inclusive network and the actors were identified as individuals but they also represent their institutions in the network.

The long-term objective of FETWater is to provide the people of South Africa and SADC with appropriate capacity building, training and education opportunities to manage the water resources in an integrated way as and where needed through effective co-operative networking. It is foreseen that a number of programmes will be developed within the boundaries of the FETWater framework.

The recipients are institutions such as the Department of Water Affairs and Forestry, the Water Research Commission, catchment management authorities and Water Boards. The service providers will have the opportunity to submit proposals to the Management Committee based on long-term co-operative networking.

- **Management**

FETWater will be administered by a Management Committee. This committee will be the responsible decision-making body that will develop programmes based on the priority areas determined by the Committee to achieve integrated water resource management. A Technical Advisory Panel will provide technical assistance to the Management Committee. The Technical Advisory Panel will be responsible to evaluate the project proposals and make recommendations to the Management Committee. A co-ordinating Secretariat will act as facilitator to the Management Committee and the network co-ordinators.

- **Performance (Projects proposed)**

The first phase of FETWater will focus on water environment management with the aim to manage the transfer of knowledge related to the environmental component of the water resource. It will not include all aspects of integrated water resources management. In order to ensure that the first phase of FETWater reflects the specific education, training and capacity building needs related to water environment management, priority areas have been determined in accordance with the National Water Act. The priority areas of the water environment management programme are resource directed measures, including quality, quantity, the Reserve and classification and Aquatic system health, including rivers, wetlands, estuaries and groundwater.

Website <http://www.dwaf.gov.za/default.asp>

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9. Bibliography

- Alaerts, GJ, Hartvelt, FJA and Patorni, F-M. **“Water Sector Capacity Building: Concepts and Instruments”**. Proc. Second UNDP symposium, Delft, 1996. A.A. Balkema, Rotterdam. 1999, 455pp.
- Almeida-Teixeira, M-E. **“Europe of Knowledge”** in Van der Beken et al. (Eds) **“The Learning Society and the Water-Environment.”** Paris, June 1999. EC-DG Research, Luxembourg, 2000 pp11-17.
- Batten D., Casti J., and Thord R. (Editors). **“Networks in Action. Communication, Economics and Human Knowledge”**. Springer-Verlag, Berlin. 1995, 327pp.
- Bogardi, J. **“GOUTTE of WATER”: a proposed Global Network of Water-Related University Chairs**” in Van der Beken et al. (Eds) **“The Learning Society and the Water-Environment”**, Paris, 2-4 June 1999. EC-DG Research, Luxembourg, 2000, pp399-404.
- CAWET. **“Industrial Innovation: Obstacles and Suggestions”**. Royal Belgian Academy Council of Applied Sciences, Brussels, April 2001, 13pp.
- Cosgrove, W. J. & Rijsberman, F.R. (for the World Water Council). **“World Water Vision Making Water Everybody’s Business”**. Earthscan Publications Ltd, London, 2000, 108pp.
- De Bruyn, J.A. & Ten Heuvelhof, E.F. **“Netwerkmanagement – Strategieën, instrumenten en normen”**. Lemma Uitgeverij, Utrecht. 1995, 223pp.
- ETNET. **“European Thematic Network of Education and Training for ENVIRONMENT-WATER”**. <http://etnet.vub.ac.be>
- European Commission. **“Towards a European Research Area”**. COM(2000)6 Brussels, 18 January 2000, 38pp.
- European Commission. **“SOCRATES/Erasmus Thematic Networks”** <http://europa.eu.int/comm/education/socrates/tnp/index.html>
- European Commission. **“Sixth Framework Programme for Research and Technological Development”** <http://europa.eu.int/comm/research/fp6.html>
- INSNA. **“International Network for Social Network Analysis”**. A Web-page with information about social networks, reference sources and links to related home-pages: <http://www.sfu.ca/~insna/>, June 2002.
- UNESCO. **“UNITWIN/UNESCO Chairs”** <http://www.unesco.org/education/educprog/unitwin/index.html>
- UNESCO. **“The IHP Education Policy Document.”** 14th Session of the Intergovernmental Council of the International Hydrological Programme (IHP), Paris, 5-10 June 2000. <http://www.unesco.org/water> <http://www.unesco.org/water/ihp/publications/ihp6.pdf>
- UNESCO/COMEST. **“The Ethics of Freshwater use: a Survey”**. Report of the Sub commission on the Ethics of Fresh Water of COMEST. Paris, 2000. 49pp. http://www.unesco.org/ethics/en/Documents/Publications/water_en.pdf
- UNESCO, UNDP, IHE, WB. **“WATER-EDUCATION-TRAINING (W-E-T) Towards a Sector Vision of Education and those to be educated”** 2nd World Water Forum, The Hague, March 2000.
- UNESCO, UNDP, UNU-INWEH, IHE, WB. **“International Symposium on Human Capacity Building in the Water Sector through innovation and collaboration”** Delft (NL),

28-30 November 2001. <http://www.ihe.nl/news/wet/index.htm>

- Van den Berghe, W. “**Achieving Quality in Training – European Guide for collaborative training projects**”. Tilkon, Wetteren, Belgium, 1995. 308pp.
- Van den Berghe, W. “**Self-assessment as the cornerstone of quality management in training**” in Van der Beken et al (Eds).
“The Learning Society and the Water-Environment”. Proceedings of the International Symposium, Paris 2-4 June 1999. EC-DG Research, EESD. Luxembourg, 2000, pp.165-170.
- Van der Beken, A. “**Networks for Education, Training, Research and Innovation – Suggestions for Best Practice**”. Joint publication of ETNET21, Brussels and UNESCO-IHP, Paris. 2002, 67 pp. Available in pdf-format at <http://etnet.vub.ac.be/ePUBLICATIONS21/Networks.pdf>
- Van der Beken, A, Mihailescu, M, Hubert, P, and Bogardi, J. (Editors).
“**The Learning Society and the Water-Environment**”. Proceedings of the International Symposium, Paris 2-4 June 1999. EC-DG Research, EESD. Luxembourg, 2000, 512pp. ISBN 92-828-8308-6. Available in pdf-format at <http://etnet.vub.ac.be/eSYMPOSIUM/>

10. Glossary of terms and list of abbreviations

Glossary of terms

Actor : A person who fulfils a particular function, intervenes effectively or represents an institution with full authority. In this report: *a person who acts, either as an individual or as a representative of a body, within a network.*

Alliance : A union to promote common interests **syn** league, coalition, confederacy, federation. In this report: *a low-intensity network with a more or less diffuse link between actors or between several networks, whatever their type, with common objectives.*

Capacity Building : The sum of efforts to enhance and utilize the knowledge, skills and competencies of people and capabilities of institutions at local, national, regional and global levels, aimed at sustaining development

Club : A group of persons associated for a common purpose.

Cluster : A number of similar objects gathered together. In this report: *a group of actors or partnerships which share common support structures and seek to exploit complementary characteristics of the group or results of projects.*

Coalition : A temporary union for a common purpose. In this report: *specific ad-hoc connection among actors of the network. An “internal coalition” comprises only actors of a given network; an “external coalition” includes also actors from outside the network.*

Competency : The right balance between knowledge and skills in order to fulfil correctly a given job. Competency involves also many personal characteristics such as attitude, aptitude, behaviour, ethical perception, judgment, opinion, belief, etc.

Connection : A relationship of thought, belief, goal, business, etc. In this report: *interaction among the actors of a network.*

Consortium (Partnership) : An international business agreement or combination. In this report: *a high-intensity network of a group of actors executing a project of limited duration.*

Cooperation : To act jointly with another or others; willing to work with others; or relating to an organisation formed to enable its members to act to better advantage; a cooperative association.

Coordinator : Someone who brings parts (of a programme, a plan, etc.) into a common whole; someone who harmonizes activities. In this report: *someone who leads high-intensity networks.*

Culture : The social structure and intellectual manifestations that characterize a society. In this report: *the set of rules (code of conduct) for interaction among the actors of a network; it includes also the expectations of the actors and the strategy of the network.*

Education : Informal, formal and non-formal processes being associated with the transfer of knowledge to an individual. Any action leading to increasing one’s knowledge. *Informal education*: family and socially directed learning. *Formal education*: regular school and university education which is carried out by, accredited private or public institutions (schools, universities, colleges, vocational education and training centres, etc.). Traditionally formal education relies on classroom teaching, tutorials, examinations, etc. along a fixed curriculum. Formal education and training, once successfully absolved, leads to acknowledged vocational

and/or academic qualifications (diploma, academic degree, etc.). *Non-formal education*: conceived to respond to imminent or latent needs, focusing more on the transfer of necessary knowledge and skills than their formal accreditation. Non-formal education (and training) relies traditionally on ‘on-the-job training’, coaching, mentoring, in-house activities, etc. It includes also self-learning.

Effectiveness : capability of causing a desired or decisive result. In this report: *a measure of the self-satisfaction of the actors in a network through self-assessment procedures.*

Efficiency : degree of competency with which something is done. In this report: *measure of the performance of a network.*

Facilitator : Someone who makes activities easier. In this report: *someone who leads low-intensity networks.*

Forum (agora): The marketplace or meeting place of an ancient greek/roman city; a medium (or publication) of open discussion; a court; a public assembly, lecture, or programme involving audience or panel discussion. In this report: *a low-intensity network organizing regularly a meeting where information and ideas are exchanged and discussion can be freely engaged; nowadays this forum-type of interaction among actors is often complemented by a “virtual forum” through Internet.*

Innovation : Introducing newly acquired knowledge and skills, introducing new ideas, methods, practices, etc.

Knowledge : The ability to understanding and critical, rational, scientific and strategic thinking. It involves reflection, selection, application and consolidation of all kinds of information. It is a universal and time-independent human ability that fulfils and satisfies the puzzle-solving mind of humankind and allows the individual to adapt more easily to a changing environment.

Learning : Learning is a biochemical process in the brain. Parts of the brain are used for short-term memorization, while other parts are used for long-term memorization. It is well recognized that learning to learn must start at a very early age. *Experimental learning* is learning-by-doing and self-directed learning.

Learning Society : Defined as the merging of the educational world and the economic world. A paradigm with various definitions, describing the broad social acceptance that the principle of lifelong learning should penetrate all walks of life. In a more focused sense, ‘learning society’ implies that companies, industries (the economic world), incorporate learning into their regular activity programme, thus abolishing the ‘pejorative’ duality of productive work and continuing education and training (CET). In more philosophical terms, ‘learning society’ assumes a general desire and proactive attitude to raise everybody’s educational level. In the ideal case, the whole society participates in this learning process.

Lifelong learning : A concept acknowledging the increasing pace of knowledge renewal and additional skills to be acquired, thus rendering one’s professional life to become a continuous process of formal education, continuing education and training (CET) and continuing professional development (CPD).

Network : A system of elements (as in lines or channels) that cross in the manner of threads in a net; a chain of radio or television stations. In this report : *a system of interdependent actors who interact with each other; subdivided in “low-intensity” and “high-intensity” networks, depending on the intensity of interaction among the actors; in an “excellent” network all actors participate in the projects of the network.*

Objective : an aim or goal to be achieved and towards which actions are directed. In this report: *the well declared goals towards which the activities (projects)of the network are directed.*

Observatory : A place or institution equipped for observation of natural phenomena (as in astronomy). In this report: *observation and follow-up of networking among actors.*

Partnership (Consortium) : Two or more persons or institutions contractually associated. In this report: *: a high-intensity network of a group of actors executing a project of limited duration.*

Platform: A statement of aims and policies in a programme. In this report: *a low-intensity network of a group of actors that supports an existing programme/project or plan a new programme/project; such an interaction could be the outcome of a **forum**.*

Quality Assurance : System for ensuring quality of output involving evaluation, analysis and action to make required changes. Related terms are *Quality Assessment, Quality Control* and *Total Quality Management (TQM)*.

Research : Is the act of a systematic search for a correct understanding of cause-effect relations, using the scientific methodology of observation, experimentation, measurement, analysis and synthesis. The driving force for research is the puzzle-solving and problem-solving mind of people.

Skills : Is the ability in mental and/ or physical performance of routine tasks. It is generally a local and time dependent characteristic and strongly linked to the technologies available in a given environment. It fulfils the problem solving-mind of humankind and is essential for the individual to operate efficiently in a given society.

Stakeholder : The general term to describe education, training and research “providers” (schools, universities, training centers, research institutes or departments) and “users” (public agencies, interest groups, companies, individuals, consumers and communities or representations thereof, taking part in education, training, research and innovation activities and thus forming the “learning society”.

Structure : The way in which constituent parts of an organism are joined together or arranged to give its peculiar nature or character. In this report: *the way in which actors interconnect for common objectives.*

Synergy (synergism) : Joint action of discrete agencies in which the total effect is greater than the sum of the effects when acting independently.

Training : Formal and non-formal learning process being associated with the transfer of abilities and skills to an individual. Any action leading to increasing one’s skills.

List of abbreviations

- Cap-Net** : Capacity Building Network for Integrated Water Resources Management
COMEST : World Commission on the Ethics of Scientific Knowledge and Technology
FETWater : Framework Programme for Education and Training in the Water Resources Sector of South Africa
EC : European Commission
ERA : European Research Area
ETNET : European Thematic Network of Education and Training for Environment-Water
EU : European Union
EWA-Ring : Interuniversity Coordinating Forum for East-West Cooperation in the Area of Environment, Water and Agricultural Soils
EWASIA : Development of an International MSc Programme on Environment and Water Resources Management in Central Asia
GOUTTE of WATER : Global Observatory of Units for Teaching, Training and Ethics of WATER
ICP : Interuniversity Cooperation Programme
IHP : International Hydrological Programme
RENEW : Research and Ethical Network Embracing Water
TECHWARE : TECHnology for Water RESources
UETP : University Enterprise Training Partnership
UN : United Nations
UNESCO : United Nations Educational, Scientific and Cultural Organisation
UNITWIN : University Twinning
WaterNet : Capacity Building Network for Integrated Water Resources Management
W-E-T : Water-Education-Training
WSSD : World Summit for Sustainable Development
WUP : Water Utility Partnership for Capacity Building in Africa

ANNEX

Survey on Networks supported by Case Studies

version 180502

QUESTIONNAIRE

Preamble

This questionnaire applies to all types of knowledge networks, regardless their specific objectives (education, training, professional development, research, technological development, innovation, dissemination, information and communication, etc).

For the sake of simplicity we do not make a distinction with respect to the typology of networks which may be described by many similar words: partnership, consortium, co-operative organisation, federation, cluster, alliance, platform, etc.... **Scientific and professional associations are also addressed.**

The questionnaire is split up into a THEORETICAL PART (A) and an APPLIED PART (B)

In PART A, we explore your opinion about networks in general without any specific application in mind. It comprises 5 GROUPS of questions:

- 1) Principles
- 2) Characteristics
- 3) Objectives
- 4) Expected outcomes and benefits
- 5) Resources needed

In PART B you are asked to identify an existing or past network in which you are/ were a member. You can make copies of this part if you wish to identify more than one network in which you are/ were active. This part comprises 7 GROUPS of questions:

- 1) Identification
- 2) Principles and characteristics
- 3) Objectives
- 4) Outcomes and benefits
- 5) Resources used
- 6) Obstacles encountered
- 7) General remarks, observations, suggestions

Your name, affiliation and address is OPTIONAL, but can help us if you would agree that we contact you for personal interview with the aim of clarifying your opinion and judgement. The analysis of the survey, however, will be fully ANONYMOUS and your name will NOT APPEAR in the report. If you fill in your name and address you will receive the results of the survey.

I AGREE WITH A PERSONAL INTERVIEW

- Yes
 No

Your NAME: _____.

Your AFFILIATION: _____.

Your ADDRESS: _____.

_____.

Tel/ Fax/ Email: _____.

DATE: _____, **SIGNED:** _____.

A. THEORETICAL PART

In this part we explore your opinion about networks in general, without any specific application in mind.

GROUP A 1: Principles of Networks

Do you agree with the following definitions or descriptions?

A1.1) A Network is a system in which network-members are connected to each other in a structured way.

- Yes
- No

If NO please give your own description or comment:

A1.2) Network-members are BODIES (institutions, not individuals), represented by at least one person committed to the network.

- Yes
- No

If NO please give your own description or comment:

A1.3) Network-members are RESOURCE-PERSONS, i.e. individuals, acting independently.

- Yes
- No

If NO please give your own description or comment:

A1.4) Selection-criteria to become a network-member should be transparent and well known.

- Yes
- No

If NO please give your own description or comment:

A1.5 A network should have long -term objectives or a strategy beyond the usual project-life time (of e.g. 3 years)

- Yes
- No

If NO please give your own description or comment:

GROUP A2: Characteristics of Networks

Do you agree with the following characteristics of a network?

A2.1) A network should be organised bottom-up by motivated members.

- Yes
- No

If NO please give your own description or comment:

A2.2) A network should be developed on a voluntary basis in an inclusive (non-exclusive) way.

- Yes
- No

If NO please give your own description or comment:

A2.3) A network should be non-hierarchical (all members are alike and have the same rights/ plights) and should have a decentralised structure.

- Yes
- No

If NO please give your own description or comment:

A2.4) A network should present clear offerings of each member and offer full internal and external comprehensibility.

- Yes
- No

If NO please give your own description or comment:

A2.5) There should be mutual trust among the network members.

- Yes
- No

If NO please give your own description or comment:

GROUP A3: Objectives of Networks

For each objective and level of action given below, fill in the number in each column that best fits your opinion on the importance of the objective and the level of action. Use the following scale to match your opinion:

1.	Not important at all
2.	Somewhat unimportant
3.	No opinion either way
4.	Somewhat important
5.	Extremely important

Objective	Level of Action		
	PROMOTE (Stimulate)	ENHANCE (Increase)	EXECUTE (Perform)
A3.1 Information flow and communication, discussion and exchange of ideas			
A3.2 Transfer of knowledge, skills and improving competencies			
A3.3 Dissemination, validation and exploitation of methods, techniques, research results and best practices			
A3.4 Synergy and pooling of expertise			
A3.5 Creating “critical mass”			
A3.6 Mobility of students/ staff			
A3.7 Add other objectives if you wish			

GROUP A4: Expected Outcomes or Benefits of Networks

For each outcome or benefit cross the column to the right that best fits your opinion about the importance of the outcome or benefit. Use the scale below to match your opinion:

1.	Not important at all
2.	Somewhat unimportant
3.	No opinion either way
4.	Somewhat important
5.	Extremely important

Outcome or Benefit	Importance				
	1	2	3	4	5
A4.1 Joint development of projects and activities among members					
A4.2 Evaluation and assessment of activities and policies					
A4.3 Studies and surveys for the benefit of members					
A4.4 Increase of financial resources for members					
A4.5 Optimisation and quality assurance of means, methods and tools used by members					
A4.6 Innovation					
A4.7 Internationalisation					
A4.8 Cultural and socio-economic integration					
A4.9 Add other outcomes/ benefits of your opinion					

GROUP A5: Resources Needed for Running Networks

For each resource needed, cross the column to the right that best fits your opinion about the importance of the resources needed. Try to be consistent with your opinion given in GROUP 3. Objectives and GROUP 4 Outcomes and benefits.

Match your opinion:

1.	Not important at all
2.	Somewhat unimportant
3.	No opinion either way
4.	Somewhat important
5.	Extremely important

Resources Needed	Importance				
	1	2	3	4	5
A5.1 Operational structure and management (i.e. secretariat, staff, rules of operation, etc)					
A5.2 Registered status with statutes					
A5.3 Funding by members					
A5.4 Structural funding by sponsors					
A5.5 Project-wise funding by sponsors					
A5.6 Overheads from projects generated by the network					
A5.7 Funding generated by selling products, expertise, services etc,					
A5.8 Add other resources if you wish					

B1. APPLIED PART

In this APPLIED PART of the questionnaire the participant of the survey is asked to identify one or more networks in which he/she is (or was) a member.

Please fill in this part as many times as you wish for different identified networks.

GROUP B1: Identified Network

B1.1) NAME of the Network

Full Name: _____

Acronym: _____

Website: _____

B1.2) General OBJECTIVE : _____

B1.3) Period of Operation: _____

B1.4) CO-ORDINATOR

Name: _____

Institution: _____

Address: _____

Tel/Fax/Email: _____

B1.5) Registered Status Yes No Unknown

B1.6) Number and type of members: _____

_____ % education/training institutions _____ % enterprises

_____ % public organisations _____ % professional associations

B1.7) Number of countries represented: _____

B1.8) Number of continents represented: _____

B1.8) Turnover in Euro/ year: _____

B1.9) Funding by members :

Yes No

B1.11) Structural (long-term) funding:

Yes No Unknown

B1.12) Funding by project (short-term)

Yes No Unknown

B1.13) Major sponsor (donor): _____

GROUP B2: Principles and Characteristics of the Identified Network

Mark the column, which matches your opinion for the following principles and characteristics:

Principles and Characteristics	Yes	No	Unknown
B2.1) Network-members are bodies (not individuals), represented by at least one person			
B2.2) Network-members are individual resource-persons			
B2.3) Network is established bottom-up by motivated members			
B2.4 Selection-criteria to be a network-member are transparent and well-known			
B2.5) Network is INCLUSIVE on a voluntary basis (if your answer is NO, the network is EXCLUSIVE and number of members is limited)			
B2.6) Network is non-hierarchical and decentralised			
B2.7) Network presents clear offerings and is comprehensible internally and externally			
B2.8) Network has long-term objectives and is NOT limited to a project			
B2.9) Add your own description if you wish			

GROUP B3: Objectives of the Identified Network

For each objective and level of action, fill in two columns: one for the actual importance given by the network according to your opinion (which may differ from the “official” objectives of the network) and one for the actual quality of action according to your judgement.

Use the following scales to match your opinion and judgement:

Scale	Importance	Scale	Quality
1	Not important at all	1	Poor
2	Somewhat unimportant	2	Fair
3	No opinion either way	3	Satisfactory
4	Somewhat important	4	Good
5	Extremely important	5	Excellent

Objective	Promote (Stimulate)		ENHANCE (Increase)		EXECUTE (Perform)	
	Importance	Quality	Importance	Quality	Importance	Quality
B3.1) Information flow and communication discussions with exchange of ideas						
B3.2) Transfer of knowledge, skills and improving competencies						
B3.3) Dissemination, validation and exploration of methods, techniques, research results, best practices						
B3.4 Synergy and pooling of expertise						
B3.5 Creating “critical mass”						
B3.6 Mobility of students/ staff						
B3.7 Add your own objectives if you wish						

GROUP B4: Outcomes and Benefits of the Identified Network

For each outcome or benefit, give your opinion about the actual importance offered by the identified network and the actual quality according to your judgement.

Use the following scales to match your opinion and judgement:

Scale	Importance	Scale	Quality
1	Not important at all	1	Poor
2	Somewhat unimportant	2	Fair
3	No opinion either way	3	Satisfactory
4	Somewhat important	4	Good
5	Extremely important	5	Excellent

Outcome or Benefit	Importance	Quality
B4.1) Joint development of project and activities among members		
B4.2) Evaluation and assessment of activities and policies		
B4.3) Studies and surveys for the benefit of members		
B4.4) Increase of financial resources for members		
B4.5) Optimisation and quality assurance of means, methods and tools used by members		
B4.6) Innovation		
B4.7) Internationalisation		
B4.8) Cultural and socio-economic integration		
B4.9) Add other outcomes/ benefits if you wish		

GROUP B5: Resources of the Identified Network

For each resource used by the identified network, give your opinion about the actual importance of the resources and give your judgement about the quality (effectiveness) of the actual use of the resource by the identified network.

Use the following scales to match your opinion and judgement:

Scale	Importance	Scale	Quality
1	Not important at all	1	Poor
2	Somewhat unimportant	2	Fair
3	No opinion either way	3	Satisfactory
4	Somewhat important	4	Good
5	Extremely important	5	Excellent

Resource	Importance	Quality
B5.1) Operational structure and management (i.e. secretariat, staff, rules of operation, etc.)		
B5.2) Registered with statutes		
B5.3) Funding by members		
B5.4) Structural funding by sponsors		
B5.5) Project-wise funding by sponsors		
B5.6) Overheads from projects generated by the networks		
B5.7) Funding generated by selling products, expertise, services, etc.		
B5.8) Add other resources you feel are important		

GROUP B6: Obstacles Encountered

Give your opinion about the list of obstacles below, which the identified network may have encountered in achieving its objectives, conducting its activities and producing outcomes/ benefits.

Use the following scale for matching your opinion:

Scale	Importance
1	Not important at all
2	Somewhat unimportant
3	No opinion either way
4	Somewhat important
5	Extremely important

Obstacles encountered	Importance
B6.1) Lack of comprehensibility internally (among members)	
B6.2) Lack of comprehensibility externally (in outside world)	
B6.3) Lack of transparency in operation and activities	
B6.4) Duplication of activities with other organisations	
B6.5) Complicated operational rules (bureaucracy)	
B6.6) Lack of motivation from members	
B6.7) Lack of motivation from (potential) sponsors	
B6.8) Lack of structural funding by members (fees)	
B6.9) Lack of structural funding by sponsors	
B6.10) Lack of project-funding	
B6.11) Lack of professionalism in operation and quality assurance	
B6.12) Obstacles due to diversity of socio-economic and professional context	
B6.13) Cultural-linguistic obstacles	
B6.14) Add any more obstacles you feel are missing	

GROUP B7 : General Remarks, Observations, Suggestions

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