

# Key enabling factors in effective and sustainable research networks

Findings from a qualitative research study



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#### **WHO Library Cataloguing-in-Publication Data**

Key enabling factors in effective and sustainable research networks: findings from a qualitative research study.

1.Research. 2.Cooperative Behavior. 3.Community Networks – standards 4.Review. 5.Data Collection. I.UNICEF/UNDP/World Bank/WHO Special Programme for Research and Training in Tropical Diseases.

ISBN 978 92 4 151020 2

(NLM classification: W 20.5)

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Printed by the WHO Document Production Services, Geneva, Switzerland.

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## Abbreviations

ACTMalaria	Asian Collaborative Training Network for Malaria
ANDI	The African Network for Drugs and Diagnostics Innovation
ASEAN	Association of South-East Asian Nations
ASEAN-NDI	ASEAN Network for Drugs, Diagnostics and Vaccines Innovation
COST	Committee on Science and Technology
EDCTP	The European & Developing Countries Clinical Trials Partnership
EVIPNet:	Evidence-Informed Policy Network
FAME	Forum for African Medical Editors
HDSS	Health and demographic surveillance systems
INDEPTH	International Network for the Demographic Evaluation of Populations and their health in Developing countries
ISHReCA	Initiative to Strengthen Health Research Capacity in Africa
LMIC	low- and middle- income country
M&E	monitoring and evaluating
MRC	Medical Research Council
NIH	National Institutes of Health
PAHO	Pan American Health Organization
R&D	Research and development
RNAS+	Regional Network on Asian Schistosomiasis and other Helminth Zoonoses
RTC	regional training centre
Sida	Swedish International Development Cooperation Agency
TDR	The Special Programme for Research and Training in Tropical Diseases
TESA	Trials of Excellence in Southern Africa
WHO	World Health Organization
WWARN	Worldwide Antimalarial Resistance Network





## Executive summary

The Special Programme for Research and Training in Tropical Diseases (TDR) has a longstanding history in the creation and development of networks; examples include The Multilateral Initiative on Malaria (MIM), the Regional Network on Asian Schistosomiasis and other Helminth Zoonoses (RNAS+), and the Asian Collaborative Training Network for Malaria (ACTMalaria).

Increasingly, there is a need for TDR to work in partnerships and through networks to leverage efforts and resources. This report outlines findings from a qualitative research study conducted at TDR on health research networks that should help TDR nurture future networks. These findings may also be of use to other institutions and initiatives interested in developing health research networks.

The research study had two separate arms – a two-part literature study and a separate survey with telephone follow-up. The overall study's aims were to: (a) identify best practices to develop effective and sustainable health research networks; and (b) serve as a practical tool for those developing such networks.

Thirty peer-reviewed articles, as well as literature sourced from selected health research networks, were analysed as part of the literature study using a set of predefined parameters, while the survey consisted of a semi-structured qualitative research questionnaire sent out to selected research networks, with a brief telephone follow-up.

The survey's results suggest that, despite being different in nature, respondents share a similar view of the meaning of the term 'network', either seeing a network as a group of individuals, institutions or units working on common objectives to achieve specific goals, or a platform through which to share knowledge.

The study identified several advantages in setting up or sustaining networks:

- for the individual participant: capacity building, peer learning, sharing of knowledge, and testing of ideas with others working in similar situations; and
- for the institution: providing a profile, creating a critical mass of organizations seen to be working together.

Challenges include: a lack of institutional and individual commitment; a lack of a common results framework (linking the vision with planned and practical steps); a lack of joint activities among members; a lack of alignment between funding and network cycles; and a lack of donor interest to fund infrastructure.

Enabling factors for effective and sustainable networks include: shared goals among network members; clear governance structures; strong leadership/champions; sustained resources (infrastructure, human and financial); and effective communications support (for communications within and beyond the network).

Network sustainability also has a time dimension linked to factors including resources, relationships and relevance.

By focusing on the enabling factors and challenges, organizations and institutions interested in setting up or supporting networks can ensure the development of effective, sustainable networks.

## About this report

This report presents the findings from a qualitative study on health research networks conducted by TDR's Research Capacity Strengthening and Knowledge Management unit. Within the context of its strategy, there is an increasing need for TDR to work in partnerships and through networks to leverage efforts and resources. Findings outlined in this report are intended to inform the TDR approach to engagement with other networks, but may also be of use to institutions and initiatives supported by TDR, and current and former TDR grantees.

The report may also be of interest to other parties focusing on health research networks and/or research capacity strengthening.

## Structure of the report

This report has been divided into **three** sections:

- **Part 1. Introduction** – sets the context and provides a brief overview of TDR and networks, and introduces the study.
- **Part 2. The study on effectiveness and sustainability of networks** – gives details of the study, including specific objectives, methodology, results, discussions and conclusions.
- **Part 3. Annexes** – provides other additional material or detail.

# 1. Introduction

## 1.1 Background

### 1.1.1 About TDR

Established in 1975, the Special Programme for Research and Training in Tropical Diseases (TDR) is a global programme of scientific collaboration. It is hosted by the World Health Organization (WHO) and sponsored by the United Nations Children's Fund (UNICEF), the United Nations Development Programme (UNDP), the World Bank and WHO.

TDR focuses on building partners' capacity to undertake research into neglected diseases of the poor. Its goal is to improve existing approaches and develop new ways to prevent, diagnose, treat and control these diseases.

Within the context of its 2012–2017 strategic plan, TDR is fostering networks and collaborating with partners to harmonize global health goals. The core elements of TDR's new strategy and vision comprise: the creation of partnerships; increasing networking opportunities; and fostering equal opportunities among researchers in low- and middle-income countries (LMICs). The purpose of this report is to inform the continued implementation of this strategy and TDR's future work.

### 1.1.2 TDR and networks

TDR has been involved with the creation, development and collaboration of several international networks in health research.

Some examples are outlined below.

- **The Multilateral Initiative on Malaria (MIM)** was launched in 1997 as a global collaborative effort by funding agencies, scientists, health professionals and industry to address the major and increasing problem of malaria in Africa with particular reference to research issues. The central objectives were to increase international cooperation and communication at all levels in order to maximize the impact of activities against malaria, develop research capacity in Africa and ensure that research findings were applied to malaria treatment and control. Between 1997 and 2005, MIM Secretariat was hosted by the Wellcome Trust, in the United Kingdom, Fogarty International Centre at the National Institutes of Health (NIH) in the United State of America, and the Karolinska Institute in Sweden. In 2006, The African Malaria Network Trust (AMANET) in the United Republic of Tanzania became the first African institution to host the Secretariat, followed by the University of Yaoundé in Cameroon (from 2011 to date). Between 1998 and 2008, the MIM directly funded peer-reviewed research grants through a funding mechanism managed by TDR. MIM – currently live but inactive – provided more than US\$ 10 million in grant support to 220 individuals from 33 African institutions. MIM/TDR supported thematic networks around malaria immunology and pathogenesis, and antimalarial drug resistance in sub-Saharan Africa. These networks led by the African investigators, promoted north-south and south-south collaboration as well as the sharing of protocols, joint training activities and student mentorship. The antimalarial drug resistance network de facto led to the formation of the Worldwide Antimalarial Resistance Network ([WWARN](#)) – a global platform that provides research evidence to support international efforts against antimalarial drug resistance.

- **Regional Network on Asian Schistosomiasis and other Helminth Zoonoses (RNAS+).** Established in 1998, TDR provided technical and financial support to three projects in the network, which led to its growth. The currently active network aims to integrate research activities with disease-control needs by strengthening communication, cooperation and coordination among scientists, and the control authorities concerned with schistosomiasis. Originally comprising two Asian member countries (the People's Republic of China and the Philippines), the network's mandate has expanded to other regional helminth zoonoses and is now present in more than nine countries and over 20 international institutions. One of the achievements of RNAS+ is the development of the dipstick dye immunoassay (DDIA) immunodiagnostic kit for animal schistosomiasis, which is used in several countries such as Cambodia, Egypt and the Lao People's Democratic Republic.
- **Asian Collaborative Training Network for Malaria (ACTMalaria).** Established in 1999 with the support of TDR (seed funding of TDR research training grant: TDR/RCS/RTG). ACTMalaria is an inter-country training and communication network that includes the national malaria control programmes of Bangladesh, Cambodia, China, Indonesia, the Lao People's Democratic Republic, Malaysia, Myanmar, the Philippines, Thailand, Timor Leste, and Viet Nam. The network – currently live and active – has two main objectives: (i) to provide collaborative training for member countries to meet the needs of malaria control in Southeast Asia and the Mekong Valley; and (ii) to improve communications on malaria problems affecting common borders among member countries.
- **South–South Initiative (SSI) for tropical disease research.** Established in 2001 in Harare, Zimbabwe, on behalf of the defunct Pathogenesis and Applied Genome Scientific Committee of TDR. SSI – currently inactive– was designed to facilitate the sharing of research resources among groups in Africa, Asia and South America. The network aims to harness diverse research and training capacity.
- **Forum for African Medical Editors (FAME).** Conceived in 2002 during a seminal meeting hosted by TDR of 15 African editors, publishers and representatives from the World Association of Medical Editors (WAME) and the Council of Science Editors. The network's objectives included strengthening scientific publishing capacities in Africa. Between 2003 and 2007, FAME, with the support of TDR, created a listserv, developed editorial guidelines, and organized workshops on editorial guidelines and scientific workshops for English-, French- and Portuguese-speaking countries. FAME is currently not active but its experience inspired the creation of similar initiatives in two other WHO regions: (i) the Eastern Mediterranean Association of Medical Editors (EMAME), which has strong support from the WHO Regional Office for the Eastern Mediterranean which hosts the EMAME's website and members' listserv; and (ii) the recently established Asia Pacific Association of Medical Journal Editors (APAME), which is closely affiliated with the WHO Regional Office for the Western Pacific (WPRO).

- **The African Network for Drugs and Diagnostics Innovation (ANDI)**. Established by TDR in 2008 with the mission of promoting African-led health innovation to address African public health needs through the efficient use of local knowledge and the assembly of research networks, and by building capacity to support development. ANDI is currently live and active, and hosted by the United Nations Office for Project Services (UNOPS) in Addis Ababa, Ethiopia. The network's goal is to promote and sustain African-led product research and development (R&D) innovation through the discovery, development and delivery of affordable new tools, including those based on traditional medicines, as well as capacity and infrastructure development.
- **ASEAN Network for Drugs, Diagnostics and Vaccines Innovation (ASEAN-NDI)**. Based on a concept developed in TDR and led by the ASEAN-NDI Secretariat in the Philippines, R&D experts, government administrators and scientists in the region worked together to establish the Network in 2009. Currently live and active, it aims to oversee the discovery and development of health technologies that will not only address health problems but also propel the health industry in the Association of South-East Asian Nations (ASEAN) Member States.
- **ESSENCE on Health Research (ESSENCE)**. Established in 2008 at a meeting of research funders organized by the Swedish International Development Cooperation Agency (Sida) in Stockholm, Sweden. TDR helped develop ESSENCE and hosts its Secretariat. It is an international collaboration between research funders, development agencies, philanthropists and multilateral initiatives. ESSENCE, which is currently live and active, aims to harmonize the way that research is funded in order to improve the impact of investments and enhance both research capacity, and the conditions for doing research worldwide.
- The network of **TDR-supported regional training centres (RTCs)** in each WHO region coordinates training courses across multiple countries and aims to foster inter- and intra-regional learning and collaboration. The first RTC was established in 2009 in Centro Internacional de Entrenamiento e Investigaciones Médicas (CIDEIM), Cali, Colombia, followed by: Gadjah Mada University (GMU); Yogyakarta, Indonesia; Astana Medical University (AMU), Astana, Kazakhstan; and the Research Institute of Tropical Medicine (RITM), Manila, the Philippines. In 2015, the University of Ghana School of Public Health (UGSPH), Accra, Ghana, and Institut Pasteur de Tunis (IPT), Tunis, Tunisia, were selected as TDR-supported RTCs in WHO African and Eastern Mediterranean regions.

### 1.1.3 The nature of networks

Before describing different types of networks, it may be helpful to consider a number of terms that are frequently used in the context of collaboration, partnerships and other interrelationships. No hard and fast definitions exist, and the terms are often used interchangeably as seen in the brief outline given below.<sup>4</sup>

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<sup>4</sup> Note: these terms can be understood differently in different settings, for example, in the United Kingdom and the USA.

## Collaboration

- A relationship between two or more parties that may not have a contractual basis.
- Parties pool their skills and resources to meet their common goal(s).
- Rights and responsibilities are not usually defined contractually.
- Risks and rewards are not necessarily shared equally.
- Parties involved are individuals or organizations.
- May sometimes be seen as part of a partnership.

## Partnership

- The business definition includes a formal, contractual relationship between two or more parties.
- Each party has clearly defined rights and responsibilities.
- Each party shares liability, risks and rewards.
- Parties are inter-dependent.

A partnership can be further categorized as alliance, consortium and formal network.

### Alliance

- A long-term relationship similar to a partnership, parties involved remain independent.
- May be strategic, in which case the relationship has a shared, corporate, goal.

### Consortium

- Generally, a partnership between multiple organizations (though, in some cases, this could be between individuals).
- Has a formal contract that outlines obligations.
- Quite common in the non-profit sector (although for-profit consortia do exist, they are relatively less common).
- Parties have a shared goal.
- Parties remain independent; the only influence or control they have over each other's activities is limited by the consortium agreement (contract).

### Network

- There are many types of networks and various definitions of a network exist, *Webster's Dictionary*, defines a network as "*an extended group of people with similar interests or concerns, who interact and remain in (informal) contact for mutual assistance or support.*"
- Generally, a relationship between three or more individuals or groups.
- Often characterized by mutual cooperation and shared interests and objectives to achieve a common set of goals.

#### 1.1.4 Different types of networks

As shown in Fig. 1, networks may interact in different ways. These interactions can be both formal and informal. In general, the following characteristics are observed.

### 1. An informal network

- The framework of personal or business relationships with which individuals interact.
- Usually does not have a specifically defined purpose at the outset.
- Usually grows in an organic manner.
- Usually not planned and managed.

An example of an informal network would be a group of researchers who exchange information with each other about their research interests and activities. In online networking, well-known examples of social media platforms that allow informal networking include LinkedIn, Facebook and Twitter.

### 2. A community

- A group of people who usually share a common interest in a specific area.
- Usually a subset (or a part of) a formal network.
- Members often share resources.
- Members trust each other and may help to improve each other's performance.
- Communities can include communities of practice (CoP).

An example of a CoP would be a group of network managers who meet twice a year and communicate regularly to address issues related to network management. It could be a subset of formal network members that meet regularly and participate actively to share their experiences on specific topics related to the overall goals of the formal network.

Both informal networks and CoP are collaborative entities that lack many of the core elements of partnerships, such as a contractual basis, or do not share risks and rewards.

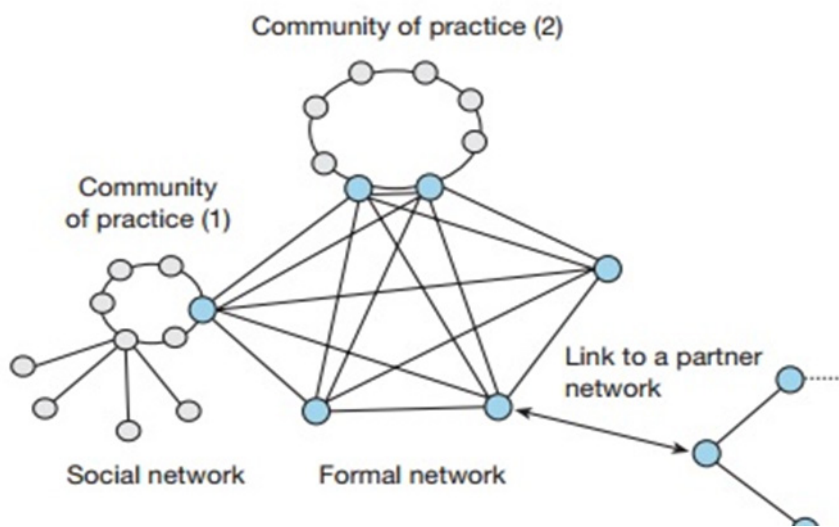
### 3. A formal network

- May grow out of an informal network or be created de novo.
- Usually established to meet a specific need.
- Often a group of institutions or organizations that are interrelated with complimentary expertise.
- Has a formal administrative structure to coordinate and run the network with clear objectives and rules.
- Members share a common vision and carry out activities to attain that vision.
- Enables coordination and joint action, and may aim to influence context, for example, through policy and advocacy or collaborative research.
- Often funded for a set purpose and for a specific period of time.
- Can take the form of an organization in its own right.

An example of such a network would be one that links researchers and users, supporting communication across a geographically spread population, and with the mandate to train, encourage or mentor new researchers through capacity strengthening and knowledge management. It aims to strengthen required skills or generate new knowledge to inform policy and practice. It usually has specific objectives and goals with a governing body and a dedicated secretariat that takes an active coordination role amongst network members.

It is difficult to strictly define a particular type of network, in reality all three exist in a continuum; some networks may have characteristics than span more than one type of network. Moreover, some networks may evolve from one type to another with time.

**Fig. 1. Formal network, community of practice and social network**



Source: Egger (1) (reproduced with permission).

### 1.1.5 Rationale for public health research networks

There are a number of reasons for creating a health research network in the context of public health. These include: (i) using the network as a means of organizing and sharing information; (ii) undertaking joint activities such as collaborative research; or (iii) working towards common goals. Ideally, networks are established with the clear aim of undertaking a common agenda. Examples of this include:

- encouraging linkages between researchers and user communities;
- supporting advocacy and increased awareness by promoting dialogue between researchers, donors and policy-makers in order to influence the policy process;
- encouraging communication across a geographically spread population;
- generating new knowledge in order to address challenges related to the public health setting;
- pooling information to produce the critical amount of evidence needed;
- replicating or testing hypotheses/interventions in different settings before scaling up;



- strengthening regional, national, institutional and individual research capacity to conduct research in line with good research practices; one element of a network's mandate could be to train, encourage or mentor new researchers.

## **1.2 Scope of this research study**

This study focused on both formal networks and CoP relating to health research, which are the networks most relevant to TDR's activities.

Social networks (such as professional social networks) were outside the remit of this particular study.

## **1.3 Aims of the study**

The research study had two key aims:

- identify best practices to develop effective and sustainable health research networks;
- serve as a practical tool for those developing such networks.

## 2. The study on effectiveness and sustainability of research networks

### 2.1 Specific objectives

The objectives of this study were to:

- collect information on key ‘enabling’ factors that lead to the development of a productive network;
- identify key challenges in developing and maintaining such networks.

### 2.2 Methodology

The study involved the following types of research:

- **a two-part literature study:** the results from the literature review guided development of the survey questions:
  - Part A: of peer-reviewed articles, using databases and search engines
  - Part B: of literature sourced from selected health research networks;
- **a two-staged survey** using a semi-structured qualitative research questionnaire consisting of:
  - email-based written questions
  - follow-up telephone interviews.

Further details on each of these are provided below.

#### 2.2.1 Two-part literature review

##### Part A of the literature review

##### Search methodology

A sequential (1 to 7) review of peer-reviewed articles was carried out across the following databases and search engines:

1. Excerpta Medica database (Embase)
2. Cumulative Index to Nursing and Allied Health Literature (Cinahl)
3. WHO regional databases
4. Google – targeted advanced search
5. Google scholar
6. Web of Science
7. PubMed.

The search terms used are shown in Fig. 2.

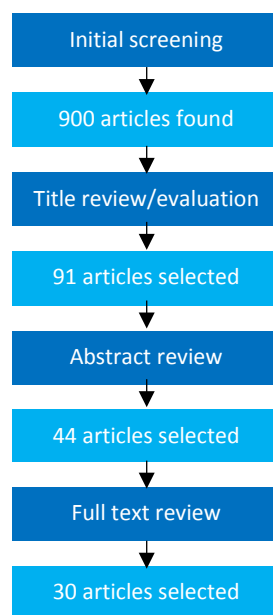
**Fig. 2. Search terms used for the literature review**



There were four screening stages (see also Fig. 3) as follows.

- **Initial screening** of all the above databases and search engines for network effectiveness, sustainability, success, results and lessons learned: 900 articles were identified.
- **The second stage** included reviewing the title of each article to ensure its relevance to research network: 91 articles were selected.
- **The third stage** included an abstract review to ensure that each article described network effectiveness and sustainability: 44 articles were selected.
- **The last stage** included a full text review: 30 articles were selected.

**Fig. 3. Methodology for literature review**



## Part B of the literature review

### Selection criteria

The selection of available literature from the networks mentioned below was based on their former or current engagement with TDR.

## Publication source

A review of published literature sourced from various health research networks (some of which are TDR-supported) was conducted as follows:

- EDCTP
- ANDI and ASEAN-NDI (TDR-supported)
- WWARN
- ACTMalaria
- RNAS+ (TDR-supported)
- Wellcome Trust networks in Africa including the Consortium for Advanced Research Training in Africa (CARTA)
- Initiative to Strengthen Health Research Capacity in Africa (ISCHReCA), (TDR-, Wellcome Trust- and Sida-supported)
- Author ID.

## Data analysis

After selecting publications for detailed analysis following the algorithm shown above, no articles on the relevant network's effectiveness and sustainability were found.

All were examined for how the term 'network' was used. Mirroring the analysis carried out for the survey, these publications were then analysed for three parameters:

- Parameter 1: Network effectiveness
- Parameter 2: Network sustainability
- Parameter 3: Challenges.

### 2.2.3 Two-staged survey

#### Survey methodology

The following networks were targeted for this study:

- INDEPTH Network
- ASEAN-NDI
- RNAS+
- EDCTP: Trials of Excellence in Southern Africa (TESA)
- ISHReCA
- Global Health Trials network
- Evidence-Informed Policy Network (EVIPNet) of the Pan American Health Organization (PAHO).

The selection of the above-mentioned networks for the study was based on engagement (former or current, if any) with TDR and their common objectives in strengthening research capacities in LMICs.

The survey of selected target networks was conducted in two parts:

- (i) an **email-based survey** of response to five questions (taking approximately 15 minutes to complete; see Annex 1);
- (ii) a **follow-up telephone interview** to elaborate on responses and obtain further details (lasting approximately 30 minutes; see Annex 2).

## Data analysis

The qualitative nature of the study required thematic content analysis for both parts of the survey. This involved developing a matrix of the responses collected from the various networks and identifying common themes and subcategories across the different responses.

## 2.3 Results

### 2.3.1 Literature review results

Following the methodology described above, 30 articles were identified after the full search and selection criteria were applied (Annex 3).

#### Parameter 1: Network effectiveness

In the literature review, network effectiveness refers to the extent to which the network attains its purpose. This was mainly within the context of the network monitoring and evaluation (M&E) framework developed for various international development agencies such as the Canadian International Development Agency (CIDA).

#### Parameter 2: Network sustainability

In the literature, a network's sustainability is viewed from different angles including financial, administrative, technical, environmental and cultural. The simple definition below, used by the International Development Research Centre (IDRC) (2), can help in understanding the various factors affecting a network's sustainability: "...sustainability means that a network continues to function until it achieves its goals, or until its members are no longer willing or able to continue, or until it becomes irrelevant."

#### Parameter 3: Challenges

The literature review indicated the following challenges when evaluating networks:

- the purposes of the network are not clearly understood by members;
- the scale and form of the network are not clearly defined and their implementation is not fully achieved within given timeframes;
- the goal(s) of the network is not fully realized.

### 2.3.2 Survey results

Our email survey and follow-up phone interviews, which were designed based on the literature review, provided insight into the nature of the various networks that were targeted.

Detailed results of the email survey and telephone follow-up, and a list of the members of the networks who were surveyed are provided in Annex 2. Responses to questions 2–4 are also summarized in tables 1–5, below, following the analysis described in section 2.2.

In table 1, respondents provided similar definitions of 'network' to the definition found in the literature, for example, the International Network for the Demographic Evaluation of Populations

and their Health in Developing Countries (INDEPTH) remarked that, “A structured network is composed of a group of individuals, institutions or units willing to cooperate around a set of well-defined ideas or strategies to achieve specific goals.”

**Table 1. Survey question 1A – What does *network* mean to you?**

Categories	Subcategories	Key quotes
A group of individuals, institutions or units	Share the same interests	<i>“[A] group of people who share [the] same interests”</i>
	From different backgrounds	<i>“Each individual/partner could have different objective[s] but will contribute towards [the] same/common goal once part of the network”</i>
	Working on common objectives to achieve specific goals	<i>“A group of individuals, institutions or units willing to cooperate around a set of well-defined ideas or strategies to achieve specific goals”</i>
A platform	To share knowledge	<i>“A platform whereby member states are able to collaborate on research projects/programmes on common problems/issues which are affecting them”</i>  <i>“[A] democratic (neutral) space to share knowledge”</i>

Table 2. Survey question 1B – What is the structure of a network?

Categories	Subcategories	Key quotes
Formalized structure	Board of Trustees	<i>“The primary role of the Board [is] to provide oversight and accountability for the activities of the Secretariat and the Network as a whole. It consists of the following members: six elected members representing the HDSS centres and are elected by them; three appointed members to reflect key donor perspectives; the Chair of the SAC as co-opted member; and the Executive Director as an ex-officio member. The members elect their Chair and co-Chair”</i>
	The secretariat (coordinating team)	<i>“INDEPTH is coordinated by a permanent executive body (‘the secretariat’) headed administratively by a full-time Executive Director appointed by and accountable to the Board of Trustees. The Executive Director is supported by full-time staff, comprising both scientific and non-scientific personnel working collectively as a team”</i>  <i>“...the overall ASEAN-NDI network hub in the Philippines where the Secretariat is based...”</i>  <i>“Coordination based at MRC South Africa [is carried out by] one project coordinator (scientist), one project manager and a team of financial managers and admin supports”</i>
	The Scientific Advisory Committee (SAC)	<i>“The SAC consists of 15 members selected on their personal merits. It advises the INDEPTH on matters relating to the scientific activities of the Network thereby assisting it to focus on health, population and social issues of greatest potential policy impact. It is the SAC’s responsibility to ensure that the highest scientific standards are upheld”</i>
	Working group	<i>“INDEPTH actively utilises Working Groups/Interest Groups dedicated to key issues of interest to the Network to act as generators and incubators for multisite research and development projects. Each Working Group is chaired by a leader who is responsible for reporting on the group’s progress and is also accountable to its participants and participating HDSS sites”</i>

**Table 3. Survey question 2 – What makes your network effective?**

Categories	Subcategories	Key quotes
A formalized network structure	A Memorandum of Understanding (MoU) signed by network members	<i>“Signed agreement and buy-in of all involved parties to the goals and strategies of the network will ensure network effectiveness”</i>
	Proper legal and institutional representation of the units or institutions	<i>“...proper legal and institutional representation of the units or institutions...”</i>
	Clear and achievable goals	<i>“Network goals should be clear and achievable”</i>
	Size and focus of network	<i>“...to keep [the] network small”</i> <i>“...narrow focus on schistosomiasis and other helminth zoonoses...”</i>
	Accountability	<i>“Financial and Human Resources to dedicate allocated resources to specified goals”</i> <i>“M&amp;E at each network member’s institution”</i> <i>“Transparency amongst the network management and members”</i>
	Well-defined roles and responsibilities for each member	ND
	Existence or creation of appropriate local coordination	ND



Categories	Subcategories	Key quotes
A strong secretariat	To keep members motivated and focused on: <ul style="list-style-type: none"> <li>the objectives of the network</li> <li>their roles to achieve the common goals.</li> </ul>	<i>“Our network secretariat have developed systems and policies to ensure efficiency and effectiveness in all our work”</i>
	Dedicated (full time) network coordination team/secretariat	ND
	Long-established secretariat to maintain history of the network, facilitates and empowers the network members	ND
	Effective communications within the network	<i>“To have a neutral space, to engage and create effective communication”</i>
Network members who have a commitment to work collaboratively and to fulfil their roles	ND	ND

ND: not determined.

**Table 4. Survey question 3 – What makes a network sustainable?**

Categories	Subcategories	Key quotes
External factors	Political willingness	<i>“Stability of environments the networks are rooted in and political willingness to support the networks are important factors for network sustainability”</i>
	Financial stability	<i>“Without funding, it will be difficult to sustain the network secretariat and activities”</i>  <i>“Availability of funding makes a network sustainable”</i>  However another respondent mentioned: <i>“Funding helps, but [it is] not the key [factor for stability] as most members contribute because of their passion”</i>
	Environmental stability	<i>“When there is conflict or war, it is difficult to sustain the activities.”</i>  <i>“Adapting to change is the key [to sustainability]”</i>
Membership factors	Members with common values	<i>“Providing common values and being fresh”</i>
	Capable and motivated members to drive the objective(s) of the network	<i>“Main driver is commitment of the members and their interactions within the network”</i>  <i>“Availability of capable Human Resources (Scientific, Managerial, M&amp;E and Financial)”</i>
	Member ownership	<i>“Having the annual meetings rotate amongst the member countries has instilled ownership of the Network by the different country groups”</i>

Categories	Subcategories	Key quotes
Leadership factors	Strong/effective leadership	<i>"The key for our network sustainability has been the leadership and early success of the network which made it attractive for researchers in neighbouring countries to join"</i>
	Effective secretariat	<i>"The secretariat to leverage support and connections among member states"</i>
	'Champion(s)'	<i>"To have a champion in the network who maintain[s] perseverance/organize[s]/provide[s a] sense of achievement and having [sic] short term/long term plans"</i>
	Building confidence and trust amongst members	<i>"To sustain the network it is important to avoid conflict of interest and to build trust amongst network member[s]"</i>
	Providing incentives to keep members engaged	ND
New source(s) of income	Developing new products and attracting new source(s) of income	<i>"Developing new products and in turn attracting new sources of income and funding"</i>
M&E	M&E framework	<i>"Constant monitoring and evaluation to translation the activities to outcome"</i>

ND: not determined.

**Table 5. Survey question 4 – What are the main challenges of working in a network?**

Categories	Subcategories	Key quotes
Scientific challenges	<p>Lack of a harmonized process to conduct research amongst different sites/countries. For example:</p> <ul style="list-style-type: none"> <li>• prolonged process for ethical approval</li> <li>• inadequate human resources and infrastructure to conduct a study with the same pace across different sites.</li> </ul>	<p><i>“At the initiation of multisite research in the network, the challenges related to the lack of harmonized [institutional review boards] IRBs, delayed ethical clearance, inadequate resources to conduct research should be brought through”</i></p>
The need to strengthen or build capacity	<p>Provision of appropriate training to strengthen and harmonize both individual and institutional capacities across sites</p>	<p><i>“Strengthening capacities by provision of relevant trainings is important. For example, lack of dedicated biostatistician[s] should be addressed prior to initiation of the project within the network”</i></p>
	<p>Further strengthening the network to pass beyond its infancy by promising products in the pipeline</p>	<p><i>“Nurturing by further strengthening the current network to pass beyond its infancy by promising R&amp;D products in the pipelines”</i></p>
Limited availability of resources	<p>Knowledge sharing: keeping members engaged by providing the right resources; policy dialogue and communications amongst network members and with the wider community</p>	<p><i>“Disparity of Communication System (infrastructure and other resources amongst network members could be a challenge”</i></p>
	<p>Human resources: scientific, managerial and secretariat</p>	<p><i>“To meet the required human resources including a critical mass of scientists and managers for each partner institution is important. Also the secretariat of the network should be staffed to coordinate the network activities”</i></p>
	<p>Financial resources: maintaining core funding and project based funding</p>	<p>ND</p>

Categories	Subcategories	Key quotes
Management of relationships and partnerships	Fostering win-win relationships amongst network members	<i>“One of the main challenges of working is to foster win-win relationship amongst network members”</i>
	Managing growth of the network	<i>“To manage the growth of the network as time goes by. This may add to the technical and managerial complexity of the network and to keep members focused on the network objectives and goals”</i>
	Maintaining/building trust	ND
	Being prepared to adapt to change if successful	<i>“Success is a risk as others will be envied and embarrassed and will try to take over the project as a result the passion and skills will gradually be lost. So [we] should be prepared to adapt to change if successful”</i>

ND: not determined.

### 2.3.3 Case study

#### Case study 1. EDCTP: TESA

**Website:** <http://www.edctp.org/>

**Secretariat location:** South Africa

**Mission** (of parent): EDCTP aims to support collaborative research that accelerates the clinical development of new or improved interventions to prevent or treat HIV/AIDS, tuberculosis, malaria and neglected infectious diseases in sub-Saharan Africa.

**Background:** created in 2009 through a brokering process which was followed by EDCTP's call to regional networks of excellence for proposals to build clinical trial capacity in sub-Saharan Africa.

**Objective:** to build clinical trials capacity and infrastructure by mentoring and training researchers, clinicians and laboratory technicians to conduct trials in diseases of poverty in line with ethical guidelines and good clinical practices.

The network comprises 10 research and training institutes and academic centres in the six African countries of Botswana, Malawi, Mozambique, South Africa, Zambia and Zimbabwe. Its Secretariat plays a coordinating role and is responsible for M&E, disbursing funds and reporting to funders. Main networking tools include a website, electronic communication and teleconferences, and an annual meeting.

An independent governing body manages the network. It considers that transparency and accountability through signed agreements contribute to its effectiveness. A dedicated coordinating team and multi-site projects add to this. Political willingness, continuous M&E, the availability of capable human resources and secured financial resources are essential for sustainability.

Challenges include: logistical issues such as the disparity in communication systems, infrastructure and other resources amongst network members; prolonged processes for ethical approvals; a lack of harmonized institution review board systems within the region; and a lack of harmonized systems for sharing (transporting specimen and data) information. Another of its challenges is familiarizing organizations and individuals in the region with the concept and added value of networks.

## Case study 2. FAME

**Website:** Currently inactive

**Secretariat location:** Mali

**Mission:** to strengthen the capacity of African medical editors, enhance the quality of research papers in local journals, and facilitate the indexing of African journals in major public databases such as PubMed.

**Background:** FAME was launched in 2003 during the 24th African Health Sciences Congress held in Ethiopia.

**Objective:** to improve the scientific and editorial quality of local medical journals through the development and promotion of good editorial practices by African medical editors.

The initial idea was conceived during a meeting hosted by TDR in 2002 with the representatives of 15 African medical journals as well as the World Association of Medical Editors (WAME) and the Council of Science Editors under the auspices of TDR. Between 2003 and 2007, with the support of TDR, FAME created a listserv, developed and published editorial guidelines, organized workshops on editorial practice, peer review and scientific writing for English-, French- and Portuguese-speaking countries. All these efforts led to the improvement of local medical journals in African universities and many FAME journals are now indexed in MEDLINE. The FAME experience was taken up by other WHO regional offices – WHO Regional Office for the Eastern Mediterranean (EMRO) and WHO Regional Office for the Western Pacific (WPRO) – which have supported similar networks of medical editors in their regions: Eastern Mediterranean Association of Medical Directors (EMAME) in the former and the Asia Pacific Association of Medical Journal Editors (APAME) in the latter, which are thriving medical editors' networks.

After the withdrawal of TDR support in 2009, FAME became less active. However, the African Journal Partnership Project (AJPP) led by the U.S. National Library of Medicine (NLM), the John E. Fogarty International Center (FIC), the U.S. National Institute of Environmental Health Science (NIEHS) and the Council of Science Editors took over and has kept the network of African medical editors alive. The project aimed at building North–South partnerships (“twinning”) between African (FAME) journals and prestigious journals from the North. The AJPP comprised editors of: Mali Medical; Ghana Medical Journal; African Health Sciences; Malawi Medical Journal; Medical Journal of Zambia; Ethiopian Journal of Health Sciences; The Lancet; British Medical Journal; The Journal of the American Medical Association; Environmental Health Sciences; Annals of Internal Medicine; The New England Journal of Medicine; and the Council of Scientific Editors. Three institutes of the NIH – National Library of Medicine (NLM), Fogarty International Center, and National Institute of Environmental Health Sciences – are still supporting the programme. In addition, NLM has supported technical capacity building, providing site visits by experienced information technology experts from Africa and purchasing equipment, including computers, printers, scanners and software. Staff from each African journal has visited the offices of its partner journal for one to two weeks. African editors reported that these site visits were extremely useful for observing the editorial and publishing practices of another journal.

The success of AJPP in keeping the network alive can be attributed to several factors:

- project goals were linked to the needs and interests of African journals;
- members' commitment and dedication;
- regular communication between network members;
- support provided by partners;
- annual formal evaluations.

FAME, seems to have failed to develop its own fund-raising strategies with no medium- or long-term sustainability plan of action. This could be due to its over reliance on TDR support, and the lack of a dedicated manager to provide leadership and promote the initiative in the African region. Fortunately, the AJPP has given this network another chance. One of the successes of FAME is still to have been used as a model to create similar successful networks in other regions.

### Case study 3. ASEAN NDI

**Website:** <http://www.asean-ndi.org/>

**Secretariat location:** Philippines

**Mission:** to address the unmet public health needs of ASEAN nations through the advancement of ASEAN-led health product innovation in the areas of drugs, diagnostics, vaccines and traditional medicine in order to improve health outcomes in the ASEAN region and beyond, and to support sustainable regional economic development.

**Background:** ASEAN-NDI was founded in 2009 in line with the objectives of the Global Strategy and Plan of Action on Public Health, Innovation, which promotes R&D, the development of north–south and south–south partnerships to support capacity building, and the establishment of strategic research networks to facilitate better coordination of stakeholders.

**Objectives:**

- to ensure that health technology development and the capacity of member states are appropriately maximized and managed according to regional health needs;
- to build a harmonious and sustainable partnership among ASEAN countries and networks to rapidly build up the needed human resources, technology, and financing for health and development security;
- to capacitate ASEAN member states and help them provide health products and services for their own needs and the needs of the ASEAN as a whole especially in addressing diseases endemic in the region;
- to contribute to the “ASEAN Community 2015” initiative of the region, in terms of health R&D cooperation.

The ASEAN-NDI was conceptualized to mirror the ANDI, a network championed by TDR, which started the idea of establishing regional innovation networks. The ASEAN-NDI is a regional innovation network composed of the ASEAN member states, namely: Brunei Darussalam, Cambodia, Indonesia, the Lao People’s Democratic Republic, Malaysia, Myanmar, the Philippines, Singapore, Thailand, and Viet Nam. Its concept was proposed by the Philippines to the ASEAN and was first discussed among ASEAN member states during the 40th Meeting of the ASEAN Sub-Committee on Biotechnology (SCB) in Bali, Indonesia, from 25 to 26 May 2009. The ASEAN Committee on Science and Technology (COST) later adopted it as its own initiative. The ASEAN, through the COST, approved the creation of the ASEAN-NDI in 2009. Start-up funds to support the establishment of the network were provided by WHO-TDR. The Philippine Council for Health Research and Development (PCHRD) of the Department of Science and Technology (DOST) served as the Secretariat of the ASEAN-NDI. The ASEAN-NDI was established to maximize and manage health technology development and the capacity of member states according to regional health needs. It aims to build a sustainable partnership among the 10 ASEAN countries to rapidly build the needed human resource, technology and financing for health development and security. Through the ASEAN Innovation Fund, ASEAN-NDI will coordinate and support research by partnering with ASEAN researchers, developing capacity-building initiatives, supporting R&D infrastructural improvement, advocating for more research investment, and enhancing regional access to health products.

The network is composed of a Boarding Council, ASEAN ministers of science and technology, an association of ministers, a Secretariat and other representatives of the 10 ASEAN member states. Administered by a governing council, its Secretariat mainly plays a coordinating role, although it also oversees M&E. Main networking tools include its website, electronic communication and videos, and its annual meeting. Its main means of M&E is through surveys.

The success of the establishment and operationalization of the ASEAN-NDI requires the engagement of key stakeholders from the public, private and non-profit sectors at every step of the process. Such stakeholders include: the various ASEAN national governments and their respective science and technology, and health ministries; public and private ASEAN research institutions and researchers; pharmaceutical, medical device and other health product companies and manufacturers, and potential partner agencies; international organizations and nongovernmental organizations (NGOs); the ASEAN nationals in the diaspora; and any other



parties interested in supporting research and development in the ASEAN region.

As with many networks, key challenges include resources (human and financial), maintaining engagement, handling continuity (as member state representatives, for example, ministers, change), and the expansion and strengthening of the network.

#### Case study 4. EVIPNet

**Website:** <http://global.evipnet.org/>

**Secretariat location:** Switzerland

**Mission:** EVIPNet is a WHO initiative that promotes the systematic use of scientific research and other sources of evidence fit for purpose to inform policy-making. It builds local capacities for teams to synthesize evidence into policy briefs that inform deliberative dialogues and provides rapid response mechanisms to facilitate shared learning at national level forums, and to mobilize global support from funders, researchers, consumers and knowledge translation experts.

**Background:** WHO platform of knowledge translation in different hubs to address health-system challenges and the generation of high-quality evidence for policy, as requested in WHO's Strategy on Research for Health ([WHA 63.22](#)) and [PAHO's Policy on Research for Health](#) (DC49/10).

**Objectives:**

- to promote/integrate research findings and policy development in a systematic way;
- to build local and regional capacities to share resources/knowledge to improve efficiency, and monitoring and evaluation.

The Ministerial Summit on Health Research in Mexico City in November 2004 and the subsequent Ministerial Forum in Bamako, Mali, in 2008, focused on the need to improve the use of knowledge for better health policies. After the summit, a World Health Assembly (WHA) resolution in May, 2005 called on the WHO: "to establish mechanisms to transfer knowledge in support of evidence-based public health and healthcare delivery systems, and evidence-based health-related policies." In response to this call, WHO launched the EVIPNet in all WHO regions.

EVIPNet is a network of networks with a Global Steering Group, which acts as a catalyst and supporter of EVIPNet globally, and facilitates the sharing of resources and standards, and regional- and country-level networks that interconnect. Each EVIPNet region has its own regional steering group supporting the country teams.

The Global Steering Group meets regularly, mostly by teleconference (although face to face meetings do take place at WHO and other settings) (3), to facilitate exchange between regions and to follow-up, coordinate and support global-level activities, such as:

- the production, sharing and dissemination of policy briefs for research synthesis (4);
- the establishment of priority-setting mechanisms for policy-relevant research syntheses;
- the production of research syntheses; the integration of different knowledge sources and disciplines (for example, communications, content experts, economists and legal advisers, evidence-based health care experts, consumers and stake holders, and policy-makers);
- the development of shared resources and standards for the platform;
- the investigation of the potential of clearinghouses, observatories and rapid response mechanisms that might provide timely, high-quality research syntheses and research relevant to policy.

EVIPNet has been active and successful in some of WHO regions such as PAHO (5). Its success is due to its leadership and strong Secretariat that coordinates activities, supports and engages the members, and

advocates for the network. It has led to the development of specialized tools geared at facilitating access to health- systems evidence and guiding knowledge translation processes,

The establishment of strategic partnerships and the leadership of skilled members that enhance trust and infuse passion and provide thoughtful solutions have been key to its success. In addition, the integration of EVIPNet into technical cooperation (in PAHO/WHO and countries with the participation of teams and experts from different fields bringing consistency and harmonization in technical work) and existing policies, has contributed to making it an integrated approach to addressing requests from Member States.

## Case study 5. INDEPTH

**Website:** [www.indepth-network.org](http://www.indepth-network.org)

**Secretariat location:** Accra, Ghana

**Mission:** to harness the collective potential of the world's community-based longitudinal health and demographic surveillance initiatives in LMICs, and bring empirical understanding to bear on critical persisting and emerging health problems.

**Background:** with a growing membership of currently 53 HDSS sites run by 46 autonomous research centres in 20 countries (across Africa, Asia and Oceania), INDEPTH is the only organization in the world capable of developing such information base, providing high quality longitudinal data not only about the lives of people in LMICs, but also about the impact of development policies and programmes on those lives.

### Objectives:

- to strengthen the capacity of member centres to conduct longitudinal health and demographic studies in defined populations;
- to stimulate, coordinate and conduct cutting-edge multi-centre health and demographic research;
- to facilitate the translation of INDEPTH's findings to maximizes its impact on policy and practice.

Following a series of meetings between partners and collaborators who were then actively involved in supporting disparate longitudinal data collection efforts, INDEPTH was created in 1998 during a meeting in Dar es Salaam, the United Republic of Tanzania, when the constitution was adopted. By then there was already a growing number of independent community-based field sites that were continuously monitoring geographically well-defined populations.

The systematic effort to harness these independent field sites into a network gained momentum during consultative meetings held between 1997 and 1998 at Wits University in South Africa, Heidelberg University in Germany, the Rockefeller Foundation Bellagio Study and Conference Centre in Italy and the Ministry of Health/Navrongo in Ghana. These consultations culminated in the 1998 Dar es Salaam founding meeting that brought together 17 field sites drawn from 13 countries across Africa and Asia. Initial support for INDEPTH's activities came from The Rockefeller Foundation, Sida's Department for Research Cooperation (SAREC), The World Bank, and the Andrew W. Mellon Foundation.

Since its founding, INDEPTH has made an immense contribution to understanding emerging and persisting health problems in LMICs. The Network has achieved this by building the capacity of researchers at member research centres to conduct excellent research that feeds into policy-making and transforms development practice. INDEPTH, through its Secretariat and its various organs, creates value for all its stakeholders globally. With member centres, working groups, funders and partner scientists, the Secretariat ensures that excellence, efficiency and impact are all privileged in its approaches and outputs.

For funding partners, the Network ensures that studies are conducted effectively and efficiently, and guarantees excellent data harmonization and management. The INDEPTH Secretariat creates opportunities for researchers to access: top scientists in LMICs; the best longitudinal data; and the best available health

research and demographic platforms to showcase their research. Policy-makers have access to cutting edge research that can provide them with evidenced options from which they can develop sound policies that hold promise to transform the lives of people living in countries with limited resources.

Supporting research centres to carry out censuses is a significant component of the INDEPTH's work. By regularly visiting households, research centres can longitudinally track births, deaths, in-migration and out-migration as well as collect data for various studies. These censuses are sustainable sources of longitudinal data that provide knowledge and policy-relevant evidence for health care and development.

INDEPTH strengthens research capacity at member centres by organizing training programmes, workshops, and regular scientific conferences, as well as sponsoring MSc. and PhD. students and research fellows. Training programmes seek to build excellence in data collection, data analysis, proposal formulation, report writing, and general administration and management. Indeed, as part of its efforts to promote scientific leadership, INDEPTH, in partnership with the Wits University, has created two MSc. training programmes. The initial one is the population-based field epidemiology training that has been running since 2005. INDEPTH has already funded well over 40 graduates through this programme who have returned to their respective centres and are actively contributing to research productivity. In addition, in 2014, the Network launched a unique MSc. track in Research Data Management for the training of data scientists.

INDEPTH brings together a unique group of scientists and individual research institutions with enormous opportunities for clinical trials and intervention studies (country specific as well as multi-centre and cross-country studies), to test and validate new methodologies, thereby advancing scientific research. Many health interventions that are now used routinely across the world were trialled on HDSS research platforms.

The main challenge is limited funding for core HDSS data collection activities and the training of staff of member centres. Other challenges include: low multi-centre scientific outputs to match the wealth of data collected; the need for tailored training activities that are more inclusive and responsive to the needs of the diverse institutions; and the need to identify cross-centre research opportunities and projects that can benefit most members (if not all).

### Case study 6. The Entrepreneur's Toolkit: lessons in creating an online platform to share knowledge and experience

**Website:** [www.entrepreneurstoolkit.org](http://www.entrepreneurstoolkit.org) (inactive)

**Secretariat location:** hosted by the International Institute for Sustainable Development (IISD).

**Mission:** to bring together socially and environmentally responsible small-scale enterprises in developing countries to share their knowledge and experience through an online platform.

**Background:** from 2008 to 2013, the Entrepreneur's Toolkit was a joint initiative with three partners: the International Institute for Sustainable Development (IISD), the North American Commission for Environmental Cooperation and the SEED Initiative, which is itself a partnership comprising the United Nations Environment Programme (UNEP), United Nations Development Programme (UNDP), and the International Union for Conservation of Nature (IUCN).

While only a few of the enterprises represented in the platform work in the health and nutrition sector, the broader group of participants share a number of characteristics with local-level health practitioners in developing countries.

The three founding partners provided both financial and technical resources when the platform was established in 2008–2009. IISD managed and further developed the platform until 2013, using its interns working on entrepreneurship in developing countries as well as internal in-kind resources.

**Objectives:**

- to provide an online venue for social and environmental entrepreneurs to find targeted, relevant information that would be of use in building and sustaining their businesses;
- to encourage those using the platform to share their own experiences as a way of expanding and enriching the content and, in so doing, developing a broader community of entrepreneurs all working to improve the social and environmental health of their local communities.

The platform was established using the same wiki software as Wikipedia. The three partners provided the base content and thematic structure. The entrepreneurs using the Toolkit provided actual cases to showcase their own experience and share country-specific information. The platform was tested and promoted at a series of annual workshops at the United Nations Commission on Sustainable Development (CSD) meetings in New York, USA, from 2009 to 2012. Additional content was shared by entrepreneurs participating in online and in-person training workshops held by the SEED Initiative with leading small-scale enterprises in Africa, Asia and Latin America.

In 2013, all three partners experienced changes in staffing and organizational structure. Without a leadership team to manage the platform, the Toolkit is no longer attracting knowledge sharing contributions from entrepreneurs. It is still live, and continuing to be accessed, but largely as a static resource.

During its lifespan as an active community platform, the Toolkit grew to 313 short articles contributed by authors from more than 10 countries including Brazil, Canada, Colombia, Guyana, India, Kenya, Mexico, Peru, the Philippines, South Africa, USA and Viet Nam. Articles have been published in English, French, Portuguese, Spanish and Vietnamese. Users from 186 countries accessed the Toolkit, with the top developing country users from Viet Nam, Brazil, Kenya, India, Columbia, South Africa and Mexico, respectively.

**Main lessons learned**

1. Leadership is key to the creation, development and maintenance of any platform. The three partners each contributed knowledge, resources and a vested interest in the success of the platform. It was seen to be important in advancing institutional objectives at each partner organization. The loss of both leadership and the connection to institutional objectives has led to the current static situation of the platform.
2. Drawing on existing networks is important when fostering a new, emerging community. The three partners were all working with entrepreneurs from developing countries, and used those informal networks to build the content and increase the usage of the platform.
3. Long-term sustained engagement of a knowledge facilitator/moderator is essential for the management of a virtual community. Reliance on volunteer contributions from users for the long-term sustainability of the platform proved to be unrealistic. It was originally envisioned that if the Toolkit proved to be a welcome resource, volunteers would provide content and, similar to Wikipedia, also contribute to the editing and maintenance of the resource. In reality, however, the amount of users creating accounts and providing inappropriate content was overwhelming, and it became necessary to introduce a moderator/editor to manage contributions.
4. The network participants themselves may need to have their capacity/skills developed in order to share their knowledge. There was an assumption that, with the right forum and tools, the entrepreneurs would know intuitively how to share their knowledge. This is not always the case. In growing a platform community, face to face training, webinars and other tools may be needed to help the target group understand what part of their knowledge is relevant, important and helpful to share, and the best ways of communicating it.
5. There is a need for a greater understanding of the “value proposition” in knowledge sharing across online communities. There was an assumption with the Toolkit platform that entrepreneurs would want to seek out knowledge to help strengthen their enterprises, and that they would contribute

their own knowledge in exchange. Any future development of the Toolkit will need to consider more carefully two important questions: (i) What value will a participant gain personally and directly from his/her participation that will benefit his/her work? (ii) What is s/he willing to take the time to share in order to get that value in exchange?

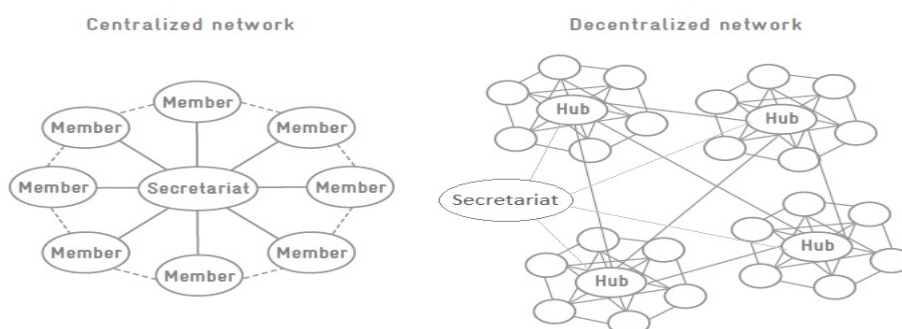
### 3. Discussion and conclusions

#### 3.1 Network structure

Networks may have a centralized or decentralized structure (see Fig. 4).

A *centralized* network has a strong secretariat with close linkages with members. However, the network members do not necessarily have a strong and direct linkage amongst themselves.

**Fig. 4. Centralized versus decentralized networks**



Source: Egger (1) (reproduced and modified with permission).

On the other hand, in a *decentralized* network (usually international or global with regional sub-networks), the network secretariat acts mainly as a facilitator because of the strong linkages that usually exist within regional networks. As regional networks allow for more diversity (since members can communicate in local languages), a decentralized network promotes both capacity strengthening and wider membership. TDR-supported RTCs are an example of such a decentralized network.<sup>5</sup>

##### 3.1.1 Formation of networks

There is not a great deal of information on network effectiveness and sustainability. Nevertheless, this can be affected by the way in which a network is formed.

There are four different stages in the development of a network, as illustrated in Fig. 5. Further details about each stage are outlined in Annex 4. In brief, activation identifies participants and stakeholders; framing establishes rules; mobilizing builds the network; and synthesizing blends participants in order to work to the common network goal.

**Fig. 5. Stages in network development**

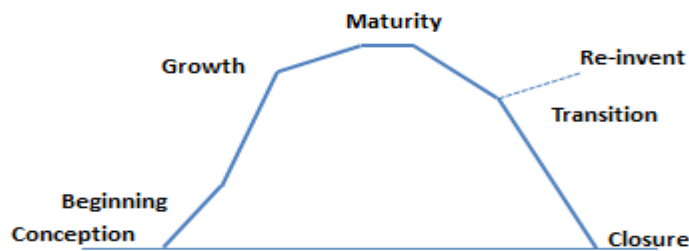


Source: based on Table 1 in (6).

<sup>5</sup> Each of the TDR-supported RTCs has its own secretariat that disseminates training materials in the given region. Meanwhile, a WHO/TDR Secretariat keeps the RTCs focused and ensures the availability of resources. It also fosters inter- and intra-regional collaboration and networking amongst these centres.

Networks have a dynamic life cycle, starting small and taking time to grow and mature. In this process, networks may need to evolve to become more effective and relevant to their goals (see Fig. 6).

**Fig. 6. Typical life cycle of networks**



Source: Egger (1) (reproduced and modified with permission).

### **3.1.2 Advantages and challenges in setting up and sustaining networks**

From our study, we identified several advantages in setting up or sustaining networks.

- For the individual participant: capacity building; peer learning; sharing of knowledge; and testing of ideas with others working in similar situations, resulting in new knowledge, problem solving, etc.
- For the institution: profile, creating a critical mass of organizations being seen to work together (good for donors) and also having greater influence because of the numbers of institutions involved.

On the other hand there are several challenges in setting up and sustaining a network.

- **Institutional commitment.** Many networks are established through high-level, inter-institutional agreements, and then individual staff members agree to participate. However, institutional priorities may change, and network members may find themselves having to deal with institutional priorities first, which reduces their participation in the network's activities resulting in the delay of work products they have planned for co-creation.

- **Individual commitment to promote network.** Individual institutional members may not promote the fact that they are members of a network, and thereby lead other network members to assume that they lack of confidence in the value of the network. This can be called a lack of vertical integration of the network objectives up and down the structure of individual institutional members. Chief executive officers, communications officers, finance staff should all be aware that the institution belongs to a network, and that individual employees are active in that network and represent the institution to other network members.
- **Lack of a common results framework.** While the vision for the network may be broad, there can be disconnection between the vision and the (availability of) practical, planned steps to achieving it. Sometimes, no benchmarks are set by which network members can assess the achievement of their goals. In general, there is a lack of ability in many networks to monitor and assess their progress: most simply point to increases in the numbers of participants and the number of times web platforms have been accessed, but do not attempt to assess whether or not members are gaining from their participation and, if so, what the likely benefits might be.
- **Lack of joint activities among members.** Networks sometimes lack concrete activities that build social capital (for example, the relationships between the participants that help to sustain and improve the outcomes of interaction). Online meetings may be held, but often there is little content preparation and lack of follow-up on members' suggestions; often, there are no joint activities that involve members in co-creating new knowledge products.
- **Lack of alignment between funding and network cycles.** Funding cycles do not always align with network cycles. Networks may be established through initial start-up grants or capacity-building grants for a fixed period of time (for example, for two to three years). The donor(s) may be open to supporting a second phase, but if the network does not act quickly enough to renew grants, or the donor delays finalizing grants, a lapse in network activities may result, sometimes for as much as a year or even longer. In such a case, the network will lose momentum and even critical coordination staff during the delay.
- **Lack of donor's interest to fund infrastructure.** Some donors are concerned about supporting so-called "infrastructure" or "management/administration" (which may run contrary to their own guidelines for support), and network managers often do not know how to pitch the network's work and the added value that can attract donor backing.

See Annex 5 for further information.

### ***3.1.3 Enabling factors for effective and sustainable networks***

While information is available about what a network is, the nature of networks and other cooperative relationships, the stages of developing such a network and the principles that can guide its development, little is known about the enabling factors for an effective and sustainable network, particularly in relation to health research.



Several factors that can affect network effectiveness are considered equally important for network sustainability.

- **Shared goals** among network members.
- **Clear governance structure:**
  - to establish the ground rules for collaboration;
  - to ensure joint activities and knowledge products (by using a common platform for knowledge sharing) are planned that lead toward the outcome;
  - to introduce a framework for monitoring the network members' work over time.
- **Strong leadership/champions:**
  - providing the network with strong and sustained leadership that supports the energy and continuity needed for work;
  - guiding and encouraging network members to identify a clear outcome based on articulated processes for mapping, sharing and creating knowledge necessary in achieving that outcome;
  - Identifying and fostering champions.
- **Sustained resources:**
  - processes, infrastructure and human and financial resources with sufficient flexibility are in place for high-quality exchange of knowledge and experience.
- **Effective communication support:**
  - a variety of methods for effective communications within and beyond the network, appropriate networking and knowledge-sharing tools are planned, for example, the use of an online platform, regular communications and meetings (including teleconferences), and physical meetings, updating and posting news at websites.

Moreover, network sustainability has a time dimension, which is linked to several factors including resources, relationships and relevance.

### ***Time***

The lifespan of networks varies and a longer lifespan does not necessarily mean that a network is more successful. In some cases, networks may come together for a specific task and conclude their work within a year or two. In others, some thought should be given from the beginning to a longer timeframe. Research capacity-building networks may require a lengthy lifespan (as long as 10 years) in order to ensure that skills and knowledge are developed and transferred between the participants. Similarly, those networks on research utilization (translation of evidence into policy and practice) may require a longer time frame to achieve goals, given the many factors involved, both internally, such as developing the appropriate policy briefs based on research, and externally, such as building connections to decision-makers to act on policy recommendations.

Nevertheless, as highlighted in Fig. 6 on a network's life cycle, networks are time bound. Therefore its sustainability does not mean it must last indefinitely. Since the last decade, international development agencies have been promoting the notion of finite lifespans for networks – encouraging emphasis on purpose, and measureable and achievable outcomes. Despite this, there is a huge stigma when a network is closed down. Network closure should not necessarily be viewed as a failure but as a necessary step in freeing the members for new engagements.

### ***Resources***

Sustainability does not necessarily mean that the networks must be financially self-sufficient. Networks can generate revenue by commercializing their products and services, and introducing membership fees, but may still rely on donor support for the majority of financial resources. However, it is critical not to rely on a single donor but to diversify the donor base and encourage in-kind contributions from members. Sustainability in the context of resources means good financial management, optimizing both financial and in-kind contributions, from a mix of donors, clients and members.

### ***Relationship***

Strong leadership with a motivated secretariat (often with full-time positions) is the key to network sustainability. Network leaders must create a sense of ownership and promote equal partnerships among the members of the network. This will not only enhance a results-driven attitude, but also ensure continued communications and engagement with members and stakeholders, which are the key enabling factors to the success of the network.

Effective communications and healthy relationships will encourage members to invest in the network and will contribute towards network sustainability. Membership continuity is essential when establishing the network. However, as it evolves, member turnover should be viewed as a normal and, in many cases, healthy phenomenon. Diversified membership with multisectoral engagement, if managed appropriately, will stimulate creative and innovative thinking.

### ***Relevance***

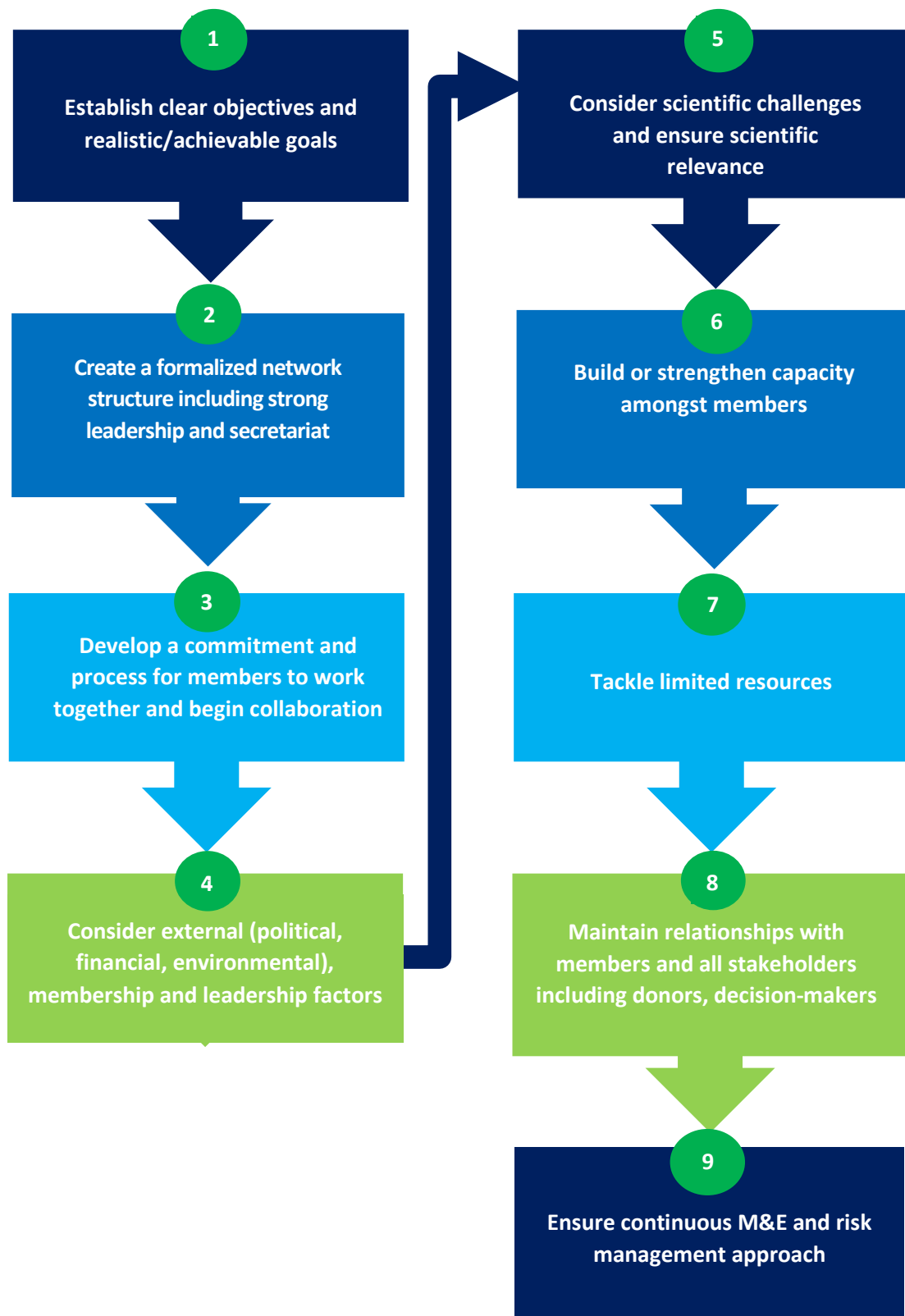
In order to be sustainable, networks must have clear objectives or goals that fit a clear niche and fulfil a scientific and policy demand relevant to the national or international (global) health development agenda.

In addition, a network must be both internally and externally relevant to both its members and external stakeholders. Therefore, networks must constantly demonstrate progress in achieving their objectives and goals. This requires development of a robust M&E framework (both internally and externally) to: assess their relevance; adjust the scope of work; redefine goals; and narrow or expand focus.

Therefore, we have attempted to identify the enabling factors influencing a network's effectiveness and sustainability through a two-part study, consisting of a survey of selected health research networks and available literature. Fig. 7 summarizes the enabling factors that this study suggests are essential in building an effective and sustainable health research network.

It is anticipated that the findings from the study will not only help the development of new health research networks, but also improve networks that are already in existence.

Fig. 7. Pathway for developing effective and sustainable health research networks



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# Annexes

## Annex 1. Survey questions

The following five questions were used in the two-part survey (through email and the follow-up interviews).

1. (a) What does *network* mean to you? (b) What is the structure of a network?
2. What makes your network effective?
3. What makes a network sustainable?
4. What are the main challenges of working in a network?
5. Do you have any comments? Yes or No. [Add comments.]

## Annex 2. Results of the email survey and telephone follow-up<sup>6</sup>

### Results of the email survey

	What does <i>network</i> mean to you?	What makes a network effective?	What makes a network sustainable?	What are the main challenges of working in a network	Comments
INDEPTH	<ul style="list-style-type: none"> <li>An interlinked group of individuals and independent/isolated centres with same interests and objectives</li> </ul>	<ul style="list-style-type: none"> <li>Strong Secretariat to keep members focused on their roles and the objectives of the network</li> <li>A common theme to share ideas and experience</li> <li>The Network Secretariat has developed systems and policies to ensure efficiency and effectiveness in all our work</li> </ul>	<ul style="list-style-type: none"> <li>Build confidence and trust amongst Network members</li> <li>Donors to continue funding and members to work towards the objectives of the Network and also to share their experience and knowledge</li> <li>Adding value to what exists in individual centres and build capacities</li> </ul>	<p><i>Scientific aspect:</i></p> <ul style="list-style-type: none"> <li>leadership and working with new sites.</li> </ul> <p><i>Capacity-building aspect:</i></p> <ul style="list-style-type: none"> <li>capacity strengthening</li> <li>funding (core support and project-based funding) as no income generated by offering courses to the Network members</li> <li>policy dialogue and communications including strengthening the INDEPTH brand</li> <li>partnerships</li> <li>fostering win-win relationships</li> <li>managing growth.</li> </ul>	ND
ASEAN-NDI	<ul style="list-style-type: none"> <li>A platform where member states are able to collaborate on research projects/programmes on common problems/issues which are affecting them</li> </ul>	<ul style="list-style-type: none"> <li>Members' commitments (in this case, ASEAN member states' commitments)</li> <li>Political and financial support for the Network's members</li> <li>Communications</li> </ul>	<ul style="list-style-type: none"> <li>Main driver is commitment of the member states and their interactions within the Network</li> <li>The Secretariat to leverage support and connections among member states</li> </ul>	<ul style="list-style-type: none"> <li>Financial and human resources</li> <li>Keeping the member states engaged and investing in the Network's activities</li> <li>Continuity of representatives from different member states (as ministers change, their focal points change)</li> <li>Expanding beyond current member states</li> <li>Further strengthening the current Network to pass beyond its infancy stage to having promising products in the pipeline</li> </ul>	ND
RNAS+	<ul style="list-style-type: none"> <li>Collective action to understand and address major societal problems through the engagement of the various stakeholders across sectors and disciplines</li> </ul>	<ul style="list-style-type: none"> <li>Strong leadership</li> <li>Commitment from members to work collaboratively across borders</li> <li>Narrow focus on schistosomiasis and other helminth zoonoses</li> <li>One health approach</li> <li>Long-established Secretariat that maintains history of the Network and facilitates and empowers the members</li> </ul>	<ul style="list-style-type: none"> <li>Key has been the leadership and early success of the Network, which made it attractive for researchers in other neighbouring countries to join</li> <li>Support for involvement of younger researchers, scientists and control personnel</li> <li>Having the annual meetings rotate amongst the member countries has instilled country groups' ownership of the Network</li> </ul>	<ul style="list-style-type: none"> <li>A strong Secretariat, adequately funded</li> <li>Keeping ownership</li> <li>Securing funding</li> </ul>	<a href="http://www.sciencedirect.com/science/article/pii/S001706X1300171X">http://www.sciencedirect.com/science/article/pii/S001706X1300171X</a>

<sup>6</sup> Note: in order to reproduce information here, some of the text has been edited and reorganized.

EDCTP: TESA	<ul style="list-style-type: none"> <li>A structured Network composed of a group of individuals, institutions or units willing to cooperate around a set of well-defined ideas or strategies to achieve specific goals</li> </ul>	<ul style="list-style-type: none"> <li>Signed agreement and buy-in of all involved parties to the goals and strategies of the Network</li> <li>Effective and independent governing body (coordination or Secretariat that monitors the Network's implementation)</li> <li>Existence or creation of appropriate local coordination and M&amp;E at each of the Network's institutions</li> <li>Well-defined goals, roles and responsibilities of all involved parties</li> <li>Proper legal and institutional representation of the units or institutions</li> <li>Accountability (financial and human resources) to dedicate allocated resources to specified goals</li> <li>Obvious outcomes and impact of the Network for the well-being of the target population</li> <li>Transparency amongst the Network's management and members</li> <li>Multi-site projects and studies (could be also a challenge)</li> <li>Dedicated (full time) Network coordination team</li> </ul>	<ul style="list-style-type: none"> <li>Stability of the environments the networks are rooted in and political willingness</li> <li>Availability of capable human resources (scientific, managerial, M&amp;E and financial)</li> <li>Secured financial and human resources</li> <li>Constant M&amp;E to translate the research or training outcomes at local, national and regional levels which must lead to: (a) developing new products; and, in turn, (b) attracting new sources of income and funding</li> </ul>	<ul style="list-style-type: none"> <li>Disparity of communication systems (infrastructure and other resources amongst Network members)</li> <li>Prolonged processes for ethical approvals</li> <li>Lack of harmonized institution review board systems within the region</li> <li>Lack of clarity on the roles and responsibilities of networks' scientists and managers – especially for the supervision of students and fellows</li> <li>Lack of harmonized systems for sharing (transporting specimens and data) information</li> <li>Absence of dedicated biostatistician (capacity building required), which must be factored in at the time of the project's initiation</li> <li>Absence of designated coordination (secretariats)</li> <li>Logistics</li> </ul>	<ul style="list-style-type: none"> <li>Networks and networking is a new concept for many organizations in the region. Networks are very loose and fluid, and not structured (which impairs the work progress)</li> <li>However, being a new concept, the process of creation of a network could be a learning process for capacity building</li> <li>Well-designed and managed networks provide tremendous opportunity for cost sharing, information sharing and capacity building</li> </ul>
ISHReCA	<ul style="list-style-type: none"> <li>A group of people who share same interest</li> </ul>	<ul style="list-style-type: none"> <li>Effective communication</li> </ul>	<ul style="list-style-type: none"> <li>Funding</li> </ul>	<ul style="list-style-type: none"> <li>The need to discern between a person's own interest and the general interest of the Network</li> </ul>	ND
Global Health Trials network	<ul style="list-style-type: none"> <li>A democratic (neutral) space to share knowledge</li> </ul>	<ul style="list-style-type: none"> <li>Neutral space</li> <li>Engaging and effective communication</li> </ul>	<ul style="list-style-type: none"> <li>Providing incentives</li> <li>Having a common value</li> <li>Being fresh</li> <li>Giving back to the participants</li> </ul>	<ul style="list-style-type: none"> <li>Keeping people engaged</li> <li>Providing the right resources</li> </ul>	<ul style="list-style-type: none"> <li>With web-based networks, there is a need for the operational team to have good/fresh ideas/the right tools and technology</li> <li>One should not reinvent the tools</li> </ul>
EVIPNet PAHO	<ul style="list-style-type: none"> <li>Different entities, with common goals and objectives that have different skills working together. Each individual/partner could have different objectives but will contribute towards same/common goal once part of the Network</li> </ul>	<ul style="list-style-type: none"> <li>Having a common understanding/purpose/objective</li> <li>To have a champion in the Network that maintains perseverance and organizes and provides a sense of achievement by having short-term/long-term plans.</li> <li>To build trust</li> <li>To keep the Network small</li> </ul>	<ul style="list-style-type: none"> <li>Simplicity of its structure</li> <li>Its champion</li> <li>Adapting to changes</li> <li>Funding helps, but not the key as most members contribute because of their passion</li> </ul>	<ul style="list-style-type: none"> <li>Success is a risk as others will be envied and embarrassed and will try to take over the project and, as a result, the passion and skills will gradually be lost</li> <li>Conflict of interest</li> <li>Lack of trust</li> <li>Being prepared to adapt to change if successful</li> </ul>	<ul style="list-style-type: none"> <li>Leadership, trust, passion good ideas, evaluation/follow-up, are important key in network</li> <li>Combination of skills are needed in a network</li> </ul>

ND: not determined.

## Results of the telephone follow-up

	Background	Objectives	Structure	Secretariat's role	M&E	Partners	Networking/communications tools
INDEPTH	<ul style="list-style-type: none"> <li>• Concept note developed in 1997</li> <li>• Presented to the donors in the North</li> <li>• Network subsequently formed</li> <li>• INDEPTH constituting meeting in 1998</li> <li>• Rapidly growing interest in demographic surveillance, e.g. due to an increased demand for evidence-based planning</li> <li>• Preliminary meetings held in London, Heidelberg, Bellagio, Navrongo and Geneva</li> </ul>	<p><i>Strategic objectives:</i></p> <ol style="list-style-type: none"> <li>1. To strengthen the capacity of INDEPTH member centres to conduct longitudinal health and demographic studies</li> <li>2. To stimulate, co-ordinate and conduct cutting-edge multi-centre health and demographic research</li> <li>3. To guide the translation of INDEPTH findings to maximize impact on policy and practice</li> </ol> <p><i>In addition:</i> By providing health and demographic data, to enable LMICs to set health priorities and policies</p>	<p><i>Membership:</i> institutions that run HDSS – called Member Centres</p> <p><i>Centre leaders:</i> Member Centre director or his/her designee</p> <p><i>Site leaders:</i> heads of HDSS field sites</p> <p><i>Board of Trustees:</i> oversight and accountability:</p> <ul style="list-style-type: none"> <li>• members representing HDSS Centres</li> <li>• members that reflect donor perspectives</li> <li>• Scientific Advisory Committee (SAC) Chair</li> <li>• Executive Director.</li> </ul> <p><i>Secretariat:</i> headed by Executive Director, supported by scientific and non-scientific staff (see next column)</p> <p><i>The SAC:</i> advises on scientific activities; maintains focus on health, population and social issues of greatest potential policy impact; upholds highest scientific standards</p> <p><i>Working groups/interest groups:</i> dedicated to key issues of interest to the Network.</p>	<ul style="list-style-type: none"> <li>• Identify key health and social issues</li> <li>• Maintain funder relations/generate funding</li> <li>• Coordinate the conduct of Network studies and evaluations</li> <li>• Publish and disseminate results</li> <li>• Promote HDSS, INDEPTH</li> <li>• Organize meetings and biennial conference</li> </ul> <p>Has core staff and project-specific staff</p> <p>Divided into sections:</p> <ul style="list-style-type: none"> <li>• Scientific Research and Coordination</li> <li>• Capacity Strengthening and Training</li> <li>• Policy Engagement and Communications</li> <li>• Administration</li> <li>• General Projects and IT</li> <li>• Finance</li> <li>• Grants Management</li> <li>• Executive Director's Office.</li> </ul>	<ul style="list-style-type: none"> <li>• M&amp;E carried out using various metrics</li> <li>• The three core objectives of the Network are expanded into measurable sub-objectives</li> <li>• Each sub-objective has well-defined output and outcomes and performance indicators</li> <li>• Survey (online; different for different groups) sent to stakeholders each year, e.g. INDEPTH Member Centres M&amp;E Metrics (<a href="http://www.smartsurvey.co.uk/s.asp?i=36608neyhg">http://www.smartsurvey.co.uk/s.asp?i=36608neyhg</a>)</li> <li>• Data used to complete a results-based management (RBM) logframe</li> </ul>	<p>Organizations with resources that enhance INDEPTH's ability to successfully execute projects, for example:</p> <ul style="list-style-type: none"> <li>• WHO</li> <li>• United Nations Educational, Scientific and Cultural Organization (UNESCO)</li> <li>• Council on Health Research for Development (COHRED)</li> <li>• International Clinical Epidemiology Network (INCLEN)</li> <li>• Health Metrics Network (HMN)</li> <li>• Northern universities</li> <li>• Alliance for Reproductive Health Research (ARHR)</li> <li>• National statistical services</li> <li>• Statistics South Africa (StatsSA),</li> <li>• universities in the South</li> <li>• University of Kwazulu-Natal (South Africa).</li> </ul>	<ul style="list-style-type: none"> <li>• Website</li> <li>• Email</li> <li>• Twitter</li> <li>• Skype</li> <li>• Telephone</li> <li>• Newsletters</li> <li>• <i>The Annual General Meeting:</i> Forum for discussing organizational matters, electing officers, reviewing reports and gauging progress</li> <li>• INDEPTH Scientific Conference (ISC) (biennial)</li> <li>• Training workshop and seminars</li> <li>• Listserv for dissemination of information on opportunities, etc.</li> </ul>



	Background	Objectives	Structure	Secretariat's role	M&E	Partners	Networking/communications tools
ASEAN-NDI	<ul style="list-style-type: none"> <li>Formed in 2009 as a regional platform to conduct research to address public health concerns of the region</li> <li>Composed of the 10 ASEAN Member States</li> <li>Concept proposed by the Philippines to ASEAN; later adopted by the ASEAN COST as an ASEAN initiative</li> <li>Aims to build a sustainable partnership among ASEAN countries and with other health R&amp;D regional networks</li> <li>Addresses the triple burden of diseases in the region – infectious tropical diseases, noncommunicable diseases, and preventable diseases due to accidents and trauma</li> </ul>	<ol style="list-style-type: none"> <li>To ensure that health technology development and the capacity of member states are appropriately maximized and managed according to regional health needs</li> <li>To build a harmonious and sustainable partnership among ASEAN countries and networks to rapidly build up the needed human resource, technology, and financing for health and development security</li> <li>To capacitate ASEAN Member States and help them provide health products and services for their own needs and the needs of the ASEAN as a whole, especially in addressing diseases endemic in the region</li> <li>To contribute to the ASEAN Community 2015 initiative of the region, in terms of health R&amp;D cooperation</li> </ol>	<p>Boarding Council, ASEAN ministers of science and technology, association of ministers, Secretariat and ASEAN Member States</p> <p>National coordinators relate to their respective country R&amp;D hubs and to the ASEAN-NDI hub (in the Philippines where the Secretariat is based)</p> <p>Governing Council is composed of the ASEAN Subcommittee on Biotechnology (SCB) focal points as approved by the ASEAN COST</p>	<p>The overall coordinating body for the activities of the network:</p> <ul style="list-style-type: none"> <li>enhances communication</li> <li>improves efficiency in coordination/ implementation of ASEAN activities.</li> </ul>	<p>The Secretariat is in charge of monitoring the Network</p> <p>Monitoring involves:</p> <ul style="list-style-type: none"> <li>conducting surveys</li> <li>answering inquiries from stakeholders.</li> </ul>	ASEAN Member States	<ul style="list-style-type: none"> <li>Website: <a href="http://www.asean-ndi.org/">http://www.asean-ndi.org/</a></li> <li>Emails</li> <li>Videoconferencing</li> <li>Annual meeting</li> </ul>

	Background	Objectives	Structure	Secretariat's role	M&E	Partners	Networking/communications tools
RNAS+	<ul style="list-style-type: none"> <li>Established in 1998</li> <li>Aim of establishing RNAS was to integrate research activities with control needs by strengthening communication, cooperation and coordination among scientists and control authorities concerned with schistosomiasis</li> <li>Originally had two Asian member countries</li> <li>In 2005 expanded mandate to other regional helminth zoonoses; changed to Regional Network for Asian Schistosomiasis Plus Other Helminth Zoonoses (RNAS+)</li> </ul>	<ol style="list-style-type: none"> <li>Coordinate and secure support for research on surveillance and control of schistosomiasis and other helminth zoonoses transmission in humans and animals</li> <li>Disseminate information on ongoing research and training activities</li> <li>Develop standardized protocols for infection and disease surveillance</li> <li>Evaluate current control strategies</li> <li>Locate opportunities for funding</li> <li>Share plans for new studies</li> </ol>	<p>A focal point is chosen to serve as coordinator for the Network's activities for each member country</p> <p>Country focal points provide a country report at annual meetings to inform on their country's research and control progress</p> <p>The Research Institute of Tropical Medicine in the Philippines has served as the Secretariat since inception</p> <p>A Board of Directors composed of country representatives and appointed international advisers makes decisions on behalf of the Network</p> <p>Professor Banchob Sripa of Khon Kaen University in Thailand is the current Chair</p>	<p>Annual meetings rotate among the member countries, organized by host country in collaboration with the Secretariat</p>	<p>Some initial funding came from TDR whereby the three top regional research needs were addressed over five years – so the metrics used basically assessed the progress and then results of these three regional research projects</p> <p>Since then success has been measured by regional grants that have been secured</p> <p>Also, annual reports from the different member countries on research and control efforts inform on progress</p>	<p>Initially the Network received support from TDR, Denmark, Sweden, and various projects</p> <p>In the last few years, WHO's Department of Neglected Tropical Diseases has provided support for annual meetings and activities</p>	<ul style="list-style-type: none"> <li>Mostly electronic</li> <li>RNAS+ website (attached to that of the National Institute of Parasitic Diseases in China)</li> <li>Meeting reports and training opportunities are announced online</li> <li>Annual meetings</li> </ul>

	Background	Objectives	Structure	Secretariat's role	M&E	Partners	Networking/communications tools
EDCTP: TESA	<ul style="list-style-type: none"> <li>Created in 2009 through a brokering process followed by EDCTP's call to regional networks of excellence for proposals to build clinical trial capacity in sub-Saharan Africa</li> <li>Network was composed of 10 research and training institutes, and an academic centre in six countries: Botswana, Malawi, Mozambique, South Africa, Zambia and Zimbabwe</li> </ul>	<ul style="list-style-type: none"> <li>Clinical trials capacity building</li> <li>Increasing the number of researchers in the region able to carry out clinical trials in diseases of poverty in Africa</li> </ul>	<ul style="list-style-type: none"> <li>Coordination based at the Medical Research Council (MRC), South Africa – one project coordinator (scientist), one project manager and a team of financial managers and administrative support</li> <li>Management team at each institution</li> <li>An advisory scientific board for the Network's scientific outputs</li> <li>Scientific teams for capacity building, networking, long-term students training for each disease (tuberculosis, HIV and malaria)</li> <li>Secretariat (coordination) responsible for M&amp;E, disbursing funds and reporting to the Network's funders</li> </ul>	<ul style="list-style-type: none"> <li>Overall management of the network and M&amp;E</li> <li>Submitting reports to the EDCTP</li> <li>Internal reporting</li> <li>Facilitating and/or organizing courses across the region for the Network's members</li> <li>Organizing annual meetings of the Network</li> </ul>	<p>Establishing a central management and M&amp;E team at MRC to monitor and coordinate the activities of the Network</p> <p>Obtaining semi-annual and annual reports – organizing courses and annual meetings for evaluation of the projects and periodic site visits during the project, and M&amp;E capacity building at the sites</p>	<p>Please refer to the TESA website or the EDCTP website.</p> <p>University of Stellenbosch, South Africa</p> <p>University of Cape Town, South Africa</p> <p>South African Medical Research Council,</p> <p>Biological Research Training Institute (BRTI), Zimbabwe</p> <p>University of Zimbabwe College of Medicine (UZ-CHS)</p> <p>University Teaching Hospital (UTH), Zambia</p> <p>Institute for Medical Research and Training (IMReT), Zambia</p> <p>Centro de Investigao em Saud da Manhica (CISM), Mozambique</p> <p>Botswana Harvard Partnership</p> <p>College of Medicine University of Malawi (CoM)</p>	<ul style="list-style-type: none"> <li>Internal emails</li> <li>Teleconferences</li> <li>Annual meetings</li> <li>TESA website (advertises notices and courses)</li> </ul>

	Background	Objectives	Structure	Secretariat's role	M&E	Partners	Networking/communications tools
ISHReCA	<ul style="list-style-type: none"> <li>Founded in 2007</li> </ul>	To create a forum for African researchers to discuss issues related to health research funding	<ul style="list-style-type: none"> <li>Secretariat</li> <li>Partners (African scientists)</li> <li>Donors</li> </ul>	<ul style="list-style-type: none"> <li>Steering committee</li> <li>Donors (Wellcome Trust, Sida)</li> <li>Secretariat (one person)</li> </ul>	Not developed	Donors: <ul style="list-style-type: none"> <li>Wellcome Trust</li> <li>Sida</li> <li>NIH</li> <li>FIC</li> <li>African researchers.</li> </ul>	<ul style="list-style-type: none"> <li>eforum</li> <li>emails</li> </ul>
Global Health Trials network	<ul style="list-style-type: none"> <li>Formed in 2010</li> <li>Web-based facility, developed by a collaboration between many research organizations working in global health</li> <li>It is open access and free</li> <li>Ethos: those working on trials in resource-limited settings can access each other whatever their role and whatever disease they work on</li> <li>Researchers can share guidance, tools and resources in order to improve trials</li> <li>The site also provides guidance material, standard documents and training resources</li> </ul>	To enable and facilitate knowledge and methodology sharing	Eight-person operational team based in Oxford  Has a governance structure and steering committee	To facilitate: <ul style="list-style-type: none"> <li>interaction</li> <li>knowledge sharing.</li> </ul>	Uses both quantitative and qualitative web-based methods  Also using interviews, surveys and questionnaires	<ul style="list-style-type: none"> <li>EDCTP</li> <li>East African Consortium for Clinical Research (EACCR), Uganda</li> <li>Africa Malaria Network Trust (AMANET), United Republic of Tanzania</li> <li>Malaria Consortium, Uganda</li> <li>Viet Nam Ministry of Health</li> <li>MRC Clinical Trial Unit, UK</li> <li>MRC, the Gambia</li> <li>Malawi-Liverpool WT Research Unit</li> <li>Swiss Tropical Institute</li> <li>The Malaria Centre, London School of Hygiene &amp; Tropical Medicine, UK</li> <li>Drugs for Neglected Diseases initiative (DNDi), Switzerland</li> <li>Liverpool Centre for Tropical Medicine, UK</li> <li>Bloomsbury Centre for Tropical Medicine, UK</li> <li>Imperial University Centre for Tropical Medicine, UK</li> <li>Institute for Tropical Medicine, Belgium</li> <li>Facultad de Salud Escuela de Salud Pública Maestría en epidemiología, Colombia</li> <li>Centre for Paediatric Research, India</li> <li>KEMRI-Wellcome Programme, Kenya</li> <li>WWARN</li> <li>Mahidol-Oxford Tropical Medicine Research Unit, Thailand</li> <li>Oxford University Clinical Research Unit, Viet Nam</li> <li>Nuffield Department of Medicine, Centre for Tropical Medicine, UK</li> <li>Sri Jayewardeneapura Teaching Hospital, Sri Lanka</li> <li>Clinical Trials Transformation Initiative, USA</li> <li>KEMRI/Centre for Disease Control, Kenya</li> <li>Clinical Trial Laboratories, Ghana</li> <li>CSH Medical University, India</li> <li>Consortium for National Health Research, Kenya</li> </ul>	<ul style="list-style-type: none"> <li>Web-based platform (digital system/chat)</li> <li>At higher level: physical meeting</li> </ul>

	Background	Objectives	Structure	Secretariat's role	M&E	Partners	Networking/ communications tools
EVIPNet PAHO	WHO platform of knowledge translation in different hubs	To: <ul style="list-style-type: none"> <li>• promote/integrate research findings and policy development</li> <li>• build local and regional capacities shared resources/knowledge to improve on efficiency</li> </ul>	ND	To: <ul style="list-style-type: none"> <li>• follow-up coordination</li> <li>• engage people</li> <li>• support advocacy</li> <li>• show case achievement</li> <li>• support structure/process</li> <li>• maintain quality</li> <li>• be inclusive</li> </ul>	ND	ND	ND

ND: not determined.

### Annex 3. Papers analysed in the literature study

In most cases PubMed links are provided so that abstracts and papers (where available) can be viewed.

No.	Title (with link to abstract or article where available)	Publication details
1	<a href="#">Sustainability of international development networks: review of IDRC experience (1995–2005).</a>	Willard T, Creech H. [PDF] Geneva: International Institute for Sustainable Development (IISD) (accessed 1 December 2015).
2	<a href="#">Evaluating emergency care research networks: what are the right metrics?</a>	Baren JM, Middleton MK, Kaji AH, O'Connor RE, Lindsell C, Weik TS, et al. Acad Emerg Med. 2009; 16:1010–3. doi: 10.1111/j.1553-2712.2009.00525.x
3	<a href="#">Editorial: north-south research collaborations: a move towards a true partnership?</a>	Binka F. Trop Med Int Health. 2005; 10:207–9.
4	Networking Schisto Japonica	Brindley PJ, Ramirez B, Tiuc W, Wud G, Wud H-W, Yie X. Parasitol Today. 1995; 11:163–5. doi: 10.1016/0169-4758(95)80144-8
5	<a href="#">Mapping synergy and antagonism in north-South partnerships for health: a case study of the Tanzanian women's NGO KIWAKKUKI.</a>	Corbin JH, Mittelmark MB, Lie GT. Health Promot Int. 2013; 28:51–60. doi: 10.1093/heapro/dar092
6	<a href="#">Measuring while you manage: Planning, monitoring and evaluating knowledge networks.</a>	Creech H. [PDF] Geneva: International Institute for Sustainable Development (IISD); 2001 (accessed 1 December 2015).
7	<a href="#">Performance improvement and assessment of collaboration: starting points for networks and communities of practice.</a>	Creech H, Laurie M, Paas L, Parry J-O [PDF] Geneva: International Institute for Sustainable Development (IISD); 2012 (accessed 1 December 2015).
8	<a href="#">Health professional networks as a vector for improving healthcare quality and safety: a systematic review.</a>	Cunningham FC, Ranmuthugala G, Plumb J, Georgiou A, Westbrook JI, Braithwaite J. BMJ Qual Saf. 2012; 21:239–49. doi: 10.1136/bmjqs-2011-000187
9	<a href="#">Net benefits: assessing the effectiveness of clinical networks in Australia through qualitative methods.</a>	Cunningham FC, Ranmuthugala G, Westbrook JI, Braithwaite J. Implement Sci. 2012; 7:108. doi: 10.1186/1748-5908-7-108
10	<a href="#">EDCTP regional networks of excellence: initial merits for planned clinical trials in Africa.</a>	Miiró GM, Oukem-Boyer OO, Sarr O, Rahmani M, Ntoumi F, Dheda K et al. BMC Public Health. 2013; 13:258. doi: 10.1186/1471-2458-13-258

No.	Title (with link to abstract or article where available)	Publication details
11	<a href="#">Building capacity for public population health research in Africa: the consortium for advanced research training in Africa (Carta) model.</a>	Ezeh AC, Izugbara CO, Kabiru CW, Fonn S, Kahn K, Manderson L et al. Glob Health Action. 2010; 3:5693. doi: 10.3402/gha.v3i0.5693
12	<a href="#">Telestroke network business model strategies.</a>	Fanale CV, Demaerschalk BM. J. Stroke Cerebrovasc Dis. 2012; 21:530–4. doi: 10.1016/j.jstrokecerebrovasdic.2012.06.013
13	<a href="#">Assessing research network and disciplinary engagement changes induced by an NSF program.</a>	Garner JG, Porter AL, Newman NC, Crowl TA. Res Eval. 2012; 21:89–104. doi: 10.1093/reseval/rvs004
14	<a href="#">Networking between community health programs: a case study outlining the effectiveness, barriers and enablers.</a>	Grills NJ, Robinson P, Phillip M. BMC Health Serv Res. 2012; 12:206. doi: 10.1186/1472-6963-12-206
15	<a href="#">The structure and construction of formal research networks: a policy oriented understanding of stakeholder engagement.</a>	Holbrook JA, Wixted B, Lewis BS, Cressman D. Vancouver: Centre for Policy Research on Science and Technology; 2011.
16	<a href="#">Work the Net. A management guide for formal networks.</a>	Egger UK, Glueck M, Buchholz G, Rana G, Arhidani S. [PDF] Eschborn: German Agency for Technical Cooperation, 2006 and 2015.
17	<a href="#">Patterns of collaboration in complex networks: the example of a translational research network.</a>	Long JC, Cunningham FC, Carswell P, Braithwaite J. BMC Health Ser Res. 2014; 14:255. doi: 10.1186/1472-6963-14-225
18	<a href="#">The good, the bad, and the neglected.</a>	Mullan Z. Lancet Glob Health. 2013; 1:e55. doi: 10.1016/S2214-109X(13)70058-5
19	<a href="#">North-south research partnership: a guidance note on the partnering process.</a>	ODI. [PDF] London: Overseas Development Institute; 2005 (accessed 1 December 2015).
20	<a href="#">The African Network for Drugs and Diagnostics Innovation.</a>	Mboya-Okeyo T, Ridley RG, Nwaka S. Lancet 2009; 373:1507–8. doi: 10.1016/S0140-6736(09)60838-2
21	<a href="#">Understanding complex interactions using social network analysis.</a>	Pow J, Gayen K, Elliott L, Raeside R. J Clin Nurs. 2012; 21:2772–9. doi: 10.1111/j.1365-2702.2011.04036.x
22	<a href="#">Looking at collaboration in north-south networks: experiences from an action research.</a>	Faber K, Wielinga F. [PDF] The Hague: PSO capacity building in developing countries; 2011 (accessed 1 December 2015).

No.	Title (with link to abstract or article where available)	Publication details
23	A review of 30 years of evaluations of research center and network programs at NIH: lessons learned and recommendations for future evaluations.	Scott JK, Blasinsky M, Stipelman B, Hall K, Vogel A, Feng A et al. Bethesda, MD: National Cancer Institute, National Institutes of Health (NIH); 2010.
24	<a href="#">Guidelines for research in partnership with developing countries: 11 principles.</a>	Bern: Swiss Commission for Research Partnership with Developing Countries (KEPE) [PDF]; 1998 (accessed 1 December 2015).
25	<a href="#">Network structure, self-organization, and the growth of international collaboration in science.</a>	Wagner CS, Leydesdorff L. Res Policy 2005; 34:1608–18.
26	<a href="#">Strengthening capacity for health research in Africa.</a>	Whitworth JA, Kokwaro G, Kinyanjui S, Snewin VA, Tanner M, Walport M et al. Lancet 2008; 372:1590–3. doi: 10.1016/S0140-6736(08)61660-8
27	<a href="#">Conceptual issues in the evaluation of formal research networks.</a>	Wixted B, Holbrook JA. Vancouver: Centre for Policy Research on Science and Technology; 2008.
28	<a href="#">North-south centre for development annual report 2009.</a>	North-South Centre Research for Development [PDF] Zurich: Swiss Federal Institute of Technology; 2010 (accessed 1 December 2015).
29	<a href="#">Environmental complexity and stakeholder theory in formal research network evaluations.</a>	Wixted B, Holbrook JA. Vancouver: Centre for Policy Research on Science and Technology; 2012.
30	<a href="#">Trials and tribulations of an African-led research and capacity development programme: the case for EDCTP investments.</a>	Zumla A, Huggett J, Dheda K, Green C, Kapata N, Mwaba P. [PDF] Trop Med Int Health 2010; 15:489-94. doi: 10.1111/j.1365-3156.2010.02479.x



## Annex 4. Stages in setting up networks and network structures

Stage	Definition	Role of network secretariat
1. Activation	Identifying participants and network stakeholders, directing their skills, knowledge and resources	Arranging, stabilizing and nurturing the network structure
2. Framing	Establishing the operating rules of the network	Influencing its prevailing values and standards, and perceptions of the network participants
3. Mobilizing	Generating and building commitment for the network and its purpose. To achieve this, must be able to understand the strategic whole and work towards common objectives based on this approach	Induce individuals to commit to a joint undertaking or specific network activities
4. Synthesizing	A blending of “various participants, each with their conflicting or different perceptions or dissimilar values” in order to work towards the network purpose	Enhance conditions for favourable, productive interaction amongst network participants

## Annex 5. Advantages and challenges of different types of network

Advantages	Challenges
<b>Formal networks</b>	
<ul style="list-style-type: none"> <li>• Joint value created by all members</li> <li>• Moves beyond merely sharing information to the aggregation and creation of <i>new</i> knowledge</li> </ul>	<ul style="list-style-type: none"> <li>• Indicators of success may have a different meaning for different members</li> <li>• Network advantages are often based on relationships or collaboration (rather than project deliverables), which go unmeasured/undervalued</li> </ul>
<ul style="list-style-type: none"> <li>• Mutual capacity development for all members</li> </ul>	<ul style="list-style-type: none"> <li>• Managing the network as its membership grows needs to be considered</li> </ul>
<ul style="list-style-type: none"> <li>• Partner organizations bring with them their own contacts and spheres of influence. This helps extend collective influence to a wider range of stakeholders, such as policy-makers</li> </ul>	<ul style="list-style-type: none"> <li>• Keeping members focused and engaged in the common goals can be difficult</li> </ul>
<b>Communities of practice</b>	
<ul style="list-style-type: none"> <li>• Often organized informally and voluntarily, without much administration</li> </ul>	<ul style="list-style-type: none"> <li>• No formal management structure</li> </ul>
<ul style="list-style-type: none"> <li>• Members have a common sense of purpose and value</li> </ul>	<ul style="list-style-type: none"> <li>• Often used only to share knowledge and experience within the same area</li> </ul>
<b>Social networks</b>	
<ul style="list-style-type: none"> <li>• Grow organically</li> </ul>	<ul style="list-style-type: none"> <li>• They are recreational and may only serve to exchange information, without any further collective actions or specific goals</li> </ul>
<ul style="list-style-type: none"> <li>• In most cases, they are not actively planned and managed</li> </ul>	<ul style="list-style-type: none"> <li>• They have no deliberately defined purpose</li> </ul>
<ul style="list-style-type: none"> <li>• Form the basis for a formal network</li> </ul>	ND

ND: not determined.



The Special Programme for Research and Training in Tropical Diseases (TDR) is a global programme of scientific collaboration established in 1975. Its focus is research into neglected diseases of the poor, with the goal of improving existing approaches and developing new ways to prevent, diagnose, treat and control these diseases. TDR is sponsored by the following organizations:



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ISBN 978 92 4 151020 2



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