



**Research Capacity
Strengthening**

 **Strategy (2002-2005)**

UNDP/World Bank/WHO
Special Programme for Research and
Training in Tropical Diseases (TDR)



Research Capacity Strengthening Strategy (2002-2005)

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Research Capacity Strengthening Strategy

Within TDR's 2000-2005 Strategy, Research Capacity Strengthening (RCS) activities will, to a far greater extent than before, be driven by the TDR research and development (R&D) agenda. The new strategy aims to increase the involvement of scientists from developing disease-endemic countries in all stages of the R&D process, optimising the development of more relevant and affordable intervention tools, strategies, and policies for disease control. While part of the available resources will continue to be directed towards strengthening health research capacity in least developed and low-income, high-disease burden countries, around 60% of the capacity building budget will be invested in targeted R&D initiatives. Two major directions for capacity building are defined:

- a) Researcher-driven, long-term institutional and individual support (restricted to least developed countries);
- b) R&D-driven support (known as 'RCS-Plus').

The new RCS strategy is part of the overall restructuring of TDR and a response to Joint Coordinating Board (JCB) and Scientific and Technological Advisory Committee (STAC) recommendations to fine-tune and develop measures to evaluate the impact of TDR's capacity building activities. The activities will expand and integrate within all TDR areas, based on well-defined, results-oriented initiatives.

Three major lines of business will be pursued:

- Individual training and career development;
- Institutional programmes;
- Targeted R&D initiatives.

Capabilities to be promoted will have a broad range, from supporting an enabling institutional framework within national health research systems, through development of managerial capacity, R&D skills in biomedical and socioeconomic areas, and capacity to advocate the integration of research results into policy and practice.

Success indicators will be based on critical outcomes such as leadership, relevant scientific productivity and self-reliance. Strategic emphases for investigator-driven and R&D-driven research capacity strengthening activities have been developed, as well as the managerial and operational processes for decision making.

Vision and Values



Good health is an essential foundation for social and economic development. Knowledge is a crucial element in health improvement, and the attainment of self-reliance in research and development in disease-endemic countries (DECs) is key to sustainability.¹

To develop and sustain an adequate research capacity is a major challenge for developing countries. Significant progress has been made over the past 25 years to increase the body of research and development (R&D) skills in DECs in terms of research training and institutional development (see overleaf). However, R&D work in neglected infectious diseases is still concentrated in advanced countries, despite the fact that these health problems are mostly encountered by developing countries. While DEC scientists are closer to the problems and solutions, they may not always have the competitive advantages, as they may lack the skills, equipment, access to information, and opportunities for participation. TDR believes that the direct involvement of researchers from DECs are values in themselves, in addition to being the means of facilitating the development and future incorporation of new tools and interventions into policy and practice.

The new TDR strategy carries the challenge of re-engineering the research capacity strengthening approach. The fast-changing environment for communicable diseases research, resulting from advances in biotechnology, information and communication, in addition to the expanding interaction between the private and public sectors, has caused TDR to rethink its capacity strengthening investment strategy.

Although TDR has been very active and flexible in developing new grant formats to capture DEC needs and opportunities, and

to better promote collaboration with partner institutions, there is a need to achieve greater involvement of DEC researchers in all stages of the R&D pipeline by making use of, and further strengthening, the existing research capacity. The involvement of developing countries at all stages of the R&D process will facilitate the development of more relevant and affordable intervention tools, strategies, and policies for disease control. TDR is a unique programme established to fund and support the development of solutions to public health problems caused by neglected infectious diseases affecting poor and marginalized populations, and to fund and support DECs to develop such solutions.

Capacity building, therefore, should permeate the programme to the fullest extent, forming a framework for priority R&D activities.

¹ Strategy 2000-2005 (TDR/GEN/SP/00.1/Rev.1); www.who.int/tdr/publications/publications/strategy.htm

Investing in Research Capacity Building



Over the years, TDR has supported individual career development and institution strengthening involving over 400 research groups in about 80 disease-endemic countries (DECs). Different types of grants and strategic approaches were created in response to a range of needs. This ongoing development of core leadership and research capacity enabled individual researchers and institutions in developing countries to be more responsive to public health needs in their own countries and to participate more effectively in the global research agenda. TDR has contributed to the formation of a new generation of public health leaders – many of them now directing disease control and research efforts. Many of the research groups and institutes supported by TDR work in close collaboration with research partners from industrialized countries and play a key role in strengthening research capacity in other developing countries – enabling “best practices” to be shared via South-South linkages. Meanwhile, several TDR-supported institutes are now world class research centres in their own right. Some of the outstanding individuals and research institutes which have received TDR grants to strengthen research capacity are leading research and training centres – many of them sited not in major towns or cities but in remote areas where the disease burden is highest. Some focus on a priority disease, while others focus on a wide range of health problems. Several have consistently trained and built up wide-ranging multidisciplinary teams of researchers – including social scientists, economists and demographers as well as a raft of health professionals. Some have used TDR support to develop the expertise and facilities needed to carry out cutting-edge scientific research – making use of new molecular techniques to discover basic knowledge that will help to speed up the development of new vaccines, drugs and diagnostic tools. In a broader context, TDR has played a key role in the analytical work on research policy and investment, as in the case of the Ad hoc Committee on Health Research and the Global Forum for Health Research (www.globalforumhealth.org), and also in the development of innovative drug R&D platforms such as the Medicines for Malaria Venture (MMV – www.mmv.org) and the Global Alliance for Tuberculosis Drug Development (GATB – www.tballiance.org), both based on public-private partnerships. Collaboration with WHO regional and field offices, and with national health authorities, has allowed the Programme to understand national research priorities and identify capacity gaps while keeping a global research perspective. Competitive R&D-driven support, such as the TDR/Rockefeller Joint Venture and the MIM/TDR grants (www.who.int/tdr/diseases/malaria/mimprojects.htm), has been instrumental in strengthening collaboration and upgrading research capacity already available in selected DECs that have overcome critical thresholds of sustainability. These grants have allowed the establishment of genuine North-South and South-South collaborations under the leadership of DEC investigators.

Stakeholder expectations



Capacity building has been a key instrument in development assistance.

However, the effectiveness and long-term sustainability of capacity building efforts have been an issue of ongoing discussion and concern. As a lead programme for research capacity building in DECs, TDR operations and achievements in this field have naturally always been a topic for scrutiny of various governing bodies, as well as in all external reviews of the Programme. Several recent processes and consultations have helped to refine and define TDR's future engagement in research capacity strengthening, including: the formulation of the TDR Strategy 2000-2005;¹ the RCS Prospective Thematic Review meeting;² consultations with the Research Strengthening Group (RSG-26), R&D Steering Committees, least developed country (LDC) researchers³ and other stakeholders; and the results of a survey on institution and individual research capacity carried out among previous grantees.⁴

The future TDR Research Capacity Strengthening strategy should be characterized by:

- **Expansion and integration** of research capacity strengthening activities within all of the TDR areas through quality, sustainable products;
- **Results orientation** – capacity strengthening activities planned around expected results with clear progression towards the established goal emphasis on **partnership, leadership** and **sustainability**;
- **Focus on LDCs** while at the same time utilizing and further strengthening **already developed research capacity** in DECs;

- Emphasis on the **entire range of disciplines/processes/capacities** required by TDR's research agenda;
- Greater **collaboration and coordination** with bi- and multilateral capacity building and mainstream health systems and disease control efforts;
- **Systematic monitoring and evaluation** of outcomes;
- Increased emphasis on **innovation and information technology**;
- **Calculated risk taking** in the choice of approaches and selection of researchers to be supported.

² RCS prospective thematic review of TDR research capacity strengthening. Geneva, TDR, 2000, (TDR/RCS/PTR/00.1); www.who.int/tdr/publications/publications_rcs.htm

³ TDR/RCS/Informal consultation on RCS in LDCs (2001)

⁴ TDR/RCS/Survey on individual and institutional research capacity

Strategic Goal



The research capability strengthening goal of TDR is to contribute to increased research self-reliance in DEC countries for identifying needs and developing solutions for preventing, diagnosing, treating and controlling the public health problems caused by neglected infectious diseases.¹

Research self-reliance* depends on a complex array of interlinked factors, the major ones being:

- **Enabling national health research systems and institutional framework:**
- **Research leadership** to establish national research/development agendas, attract resources, new researchers and research groups, and develop networks;
- **Research institution management** capacity to ensure quality, efficiency, accountability and results orientation;
- **Project management capacity** for carrying out specific research projects to ensure relevance, quality, timeliness, efficiency and accountability;
- **Critical mass of personnel with up-to-date R&D skills** in biomedical, social economic and behavioural sciences;
- **Adequate maintained infrastructures** (buildings, equipment, electronic communication, other facilities);
- **Means and opportunities for participating in international R&D partnerships;**
- **Re-creation of the research capacity** base through attracting and developing new researchers.
- **Capacity to advocate the translation of research results into policy and practices;**
- **Steady flow of resources and actual relevant research activities.**

Each factor must be present if self-reliance is to be achieved. In many least developed and low-income countries, the human and financial resource base is insufficient to sustain a critical mass of research capacity and several of the elements will not exist in the foreseeable future. Therefore, long-term capacity strengthening efforts will need to assess and address the particular conditions in individual cases. However, research capacities already exist in some LDCs and many middle-income/advanced developing countries, allowing productive engagement in international R&D collaboration. In this case, limited and targeted support addressing selected aspects can contribute significantly towards self-reliance.

The ability to develop, understand, and adapt, as opposed to purchasing and/or importing technologies, involves basic as well as applied research capacity. Since building of research capacity is a long-term continuous process and no individual agency alone can close the enormous gap within developing endemic countries, concerted action among agencies and national and regional institutions, in both the public and private sectors, are required. Furthermore, inclusion of a research capacity building framework and resource allocations within national development plans is fundamental to creating a sustainable research base in DEC countries. TDR's capacity strengthening work will be directed to developing the elements required for research self-reliance in developing DEC countries. The vision and ability to identify relevant research issues and develop adequate process will lead to partnerships, good practices and accepted scientific standards. Focus will be on individual researchers, research institutions or specific research projects to increase research self-reliance in DEC countries for infectious diseases affecting poor and marginalized populations.

* self-reliance in this context is understood as the ability to engage on an equal base in the generation and exchange of knowledge with the national and international research community.

Strategic directions



Tuning TDR to DEC research capabilities

As established in the TDR Strategy (2000-2005), research capacity strengthening is a concern of the whole of TDR rather than of a particular TDR unit.

The RCS team and the Research Strengthening Group (RSG) will assume a leadership role in ensuring that capacity strengthening thinking and action are integrated across all expected results of the Programme. Specific capacity strengthening product components are budgeted and monitored within Expected Results E (Partnerships established and adequate support for research and product development capacity building in countries provided). Corresponding R&D products are budgeted and monitored within Expected Results A-D.

Activities will be re-aligned along two major strategic directions:

- 40% of the capacity strengthening budget will be reserved for LDCs, focusing on individual researchers and institutions (in a broad strategic research agenda);
- 60% will be allocated to research capability strengthening in DEC countries in support of specific high priority R&D areas for TDR (see below).

Strategic direction	Approach		Proposed expected outcome (as per TDR Strategy) ⁵
	Middle-income/Advanced developing countries	Low-income/Least developing countries	Performance indicators and targets (2000-2005) ⁵
Researcher-driven⁶ (40% of budget)	No financial support will be allocated to stand-alone capacity building activities, with the exception of re-entry grants to past TDR trainees during a transitional period.	Institutional and individual support to develop and sustain a minimum research capability. Countries in this group would include LDCs (as per UN classification), and selected Low-Income (as per World Bank definition) high-disease burden countries.	<ul style="list-style-type: none"> • Research competencies and skills developed through completion of 50 M.Sc. and 100 Ph.D. degrees; • 13 institutions in LDCs strengthened through development of long-term strategic programmes.
R&D driven⁷ (RCS-Plus) (60% of budget)	Support to TDR-defined strategic R&D priorities involving DEC researchers who have comparative advantage within a specific development project. Preferential support to DEC countries will compensate for competitive disadvantages focusing on developing particular skills and institutional capability as required. South-South collaborations and multi-partner programmes with other agencies will be promoted.		<ul style="list-style-type: none"> • DEC research centres and experts will account for 50% of the total number of centres and experts engaged in TDR research and product development; • 15% of research findings in new and improved tools and intervention methods produced by DEC institutions.

⁵ TDR Strategy 2000-2005 – Monitoring indicators.

⁶ Strategic emphasis for researcher-driven capacity building – Annex A1.

⁷ Strategic emphasis for R&D-driven capacity building – Annex A2.

Lines of business



In pursuit of building research self-reliance in DEC's, TDR will develop three Lines of business within the two strategic directions described:

Researcher-driven capacity building

1. Individual capacity building aimed at supporting individuals to gain R&D skills and competencies.
2. Institutional capacity building/strengthening in a select number of LDC research institutions.

R&D-driven capacity building (RCS-Plus)

3. Targeted capacity in support of TDR R&D priorities among DEC individuals and institutions.

The table below presents TDR capacity building emphasis by pre-conditions for research self-reliance (see page 10) for each capacity building Line of business. The conditions marked indicate areas in which TDR will focus support.

Strategic direction	Researcher-driven capacity building		R&D-driven capacity building
	1. Individual capacity building	2. Institutional capacity building	3. Targeted support of TDR R&D priorities
Enabling national health research systems and institutional framework	-	x	-
Research leadership	x	x	-
Institution management capacity	-	x	-
Project management capacity	x	x	x
Critical mass of R&D skills	x	x	x
Adequate maintained research infrastructure, including access to IT	-	x	x
Means and opportunities for international R&D partnerships	x	x	x
Re-creation of research capacity base	-	x	-
Flow of resources and actual research	x	x	x

Prior to 2000, independent individual capacity building (through training and research projects) accounted for nearly 50% of capacity building activities and budget; by 2005 it will account for only 10%, with institutional capacity building (including human resources development) and capacity building in support of TDR R&D priorities accounting for 30% and 60% respectively.

Performance review - SWOT analysis



The strengths, weaknesses, opportunities, and threats (SWOT) facing the renewal of TDR's research capability strengthening strategy are summarized below:

Internal to TDR

Strengths

- The dual objectives of TDR, i.e. R&D and capacity strengthening;
- Strong operational capability, including a flexible and efficient grant system;
- International credibility, leverage, and brokerage power;
- Tradition of collaborating with a wide range of partners;
- Long-term commitment to capacity building;
- Expanded capability strengthening mandate and commitment.

Weaknesses

- Previous programme management was based on input/process planning and implementation;
- Previous input-based budgeting led to some duplication of effort at a low level of synergy between the R&D and capability strengthening objectives of TDR;
- Current monitoring systems and approaches are geared for monitoring inputs and processes – not outputs and results.

External to TDR

Opportunities

- DEC R&D capacity is far more developed now compared to one or two decades ago;
- Increased global focus (and funding) for neglected infectious diseases;
- Some of the new technologies, e.g. bioinformatics, make it feasible for DEC researchers to participate on equal footing;
- Advances in information technology provide new opportunities for access to information, networking, and distance learning.

Threats

- Continued global focus on quick-fix and operational solutions to public health problems gives research low priority;
- Development of research self-reliance is a multi-faceted task and it is difficult to measure and attribute impact to investment;
- Poor economies of most DECs maintain public R&D investments at a less than viable level;
- Globalization makes high level DEC researchers extremely mobile in search of better opportunities.

To succeed with the new capability strengthening strategy, TDR needs to capitalize on the strengths, and develop plans and actions to overcome the weaknesses, seize opportunities, and work effectively around the threats.

Critical success indicators

The critical measures of success for all three lines of business relate to progress towards the research self-reliance goal. TDR will track the performance of the capacity strengthening investment by monitoring critical indicators. Specific indicators of process, outcome and impact tested in the capacity strengthening survey will be applied for each success criteria.

Line of business	Critical success indicators
Individual capacity building	<ul style="list-style-type: none"> • Research leadership develops among supported individuals; e.g. research groups develop around these individuals; • Research groups increasingly able to generate resources through competitive processes; • Production of research results of national and international significance.
Institutional capacity building	<ul style="list-style-type: none"> • Research leadership develops among supported institutions; e.g. they become lead partners in networks, lead centres for particular lines of research; • Institutions increasingly able to generate resources through competitive processes; • Mature institutions able to re-create research capacity, through attracting and developing new researchers and managers; • Production of research results of national and international significance based on partnerships and networks; • Adherence to ethical principles and internationally accepted scientific standards.
Targeted capacity building in support of TDR R&D priorities	<ul style="list-style-type: none"> • Specific research results directly attributed to participation and capacity strengthening support; • Institution or researcher able to attract new research and resources on a competitive basis within the same or related research fields.



Gap analysis



The new capacity strengthening strategy represents a significant departure from the previous way of operations and a range of gaps can be identified that needs to be worked on. Some of this work is already well under way, while other work remains to be started.

1) Management of the RCS product portfolio

- a) Needs to build, maintain, and prioritize staff competencies in institutional capacity development, career planning, networking, implementing change, project management, team building, etc.;
- b) Dedication of relatively more staff time with a ratio between the budget for personnel and operations in Expected Results Area E similar to those of Expected Results A-D;
- c) Review processes needs to build on selective and proactive identification of candidates for support and with more emphasis on a pre-qualification phase prior to the actual competitive phase;
- d) Need to redefine type of support (grant packages) available to reflect the three lines of business, with funding based on development plans, including timelines and milestones as a condition for continued support, and clear indication of results and progress towards the goals and critical success indicators;
- e) Streamlining of grant administration and follow up, including development of effective programming, tracking and evaluation systems for joint projects and to allow for a time frame of 5-10 years likely to be required for an individual or institution to achieve the goal of research self-reliance.

2) TDR thinking about research capacity building

- a) Needs to make all areas of TDR work on involvement of DEC researchers and to 'walk and talk' research capacity strengthening;
- b) Establishment of mechanisms for and creation of specific project teams across TDR to collaborate on institutional and R&D driven research capacity strengthening projects.

3) External partnerships and collaboration

- a) Develop modalities for and expand actual collaboration with multi- and bilateral research-oriented development agencies, in particular in long-term institutional capacity development projects.

Integrating the Lines of business



Researcher-driven capacity building

1. Individual

This line of business is reserved for nationals from selected low-income, least developed, high-disease burden countries. Open Calls for Applications are announced and requests by individuals are considered by the RSG once a year. Applications are reviewed on a competitive basis, taking into account the relevance of proposed support or training to home country and/or region for studies leading to postgraduate degrees or to the acquiring of specialized skills. Supported individuals are expected to contribute to the development of infrastructure and home research environment, exhibit scientific expertise in their chosen field, and be conversant with modern information and communication systems.

Two general types of support are provided:

- **Postgraduate degree or specialized training** – to obtain M.Sc./Ph.D. or to undertake targeted short-term training. Additional collective support may be provided to encourage focus on TDR research priorities and to identify individuals with leadership potential.
- **Leadership class** – to individuals already holding a postgraduate degree who are identified as having leadership potential. Support will be tailored to the needs of the individual and may include for example a personal career development plan, a time limited re-entry grant, or seed resources to develop a line of research or acquire equipment.

The RSG will play an important role in the selection, review of progress and grant renewal of enrolled individuals. For each type of support, biennial cohorts of grantees will be established to facilitate group support, networking, and establishment of milestones and benchmarks for achievements. The time frame for support will be 5-10 years.

Eligibility criteria for individual capacity strengthening investment

- Affiliation to national institution not targeted for institutional support;⁸
- Commitment to research in TDR target diseases;
- Holder of a graduate degree;
- Leadership potential;
- Adherence to set training and/or research milestones;
- Endorsement from home institution.

⁸ Those from target institutions have to be considered under the capacity building plan for that institution.



2. Institutional

This line of business is reserved for institutions in LDCs and selected low-income, high-disease burden countries with lesser developed research capacity. Applications will be reviewed based on an institution's self-assessment of the pre-conditions for research self-reliance. Prior to receiving support, a feasibility study will be undertaken by TDR to determine support needs, institutional commitment and the likelihood of success. Proposals should be based on a long-term strategic plan (5-10 years) and a rolling medium-term development plan with clear milestones, and designed as an integral part of an institution's or research group's development programme rather than as an isolated project. The support package is expected to:

- Develop research leadership;
- Promote the development of infrastructure and research environment; – improve training opportunities, scientific expertise in biomedical and social sciences areas, information and communication systems;
- Foster opportunities for collaboration with more advanced countries scientists and institutions.

Selection of institutions for support will be done by the RSG, based on the self-assessment and feasibility reports.

The support will be customized to the specific needs and challenges of each particular institution.

The RSG will play an important role in the selection, technical advice to, and follow-up of enrolled institutions. The RSG will annually review the milestones and benchmarks achieved, and make decisions about continuation or discontinuation of support.

Eligibility criteria for institutional capacity strengthening investment

- LDC, low-income, high-burden country;
- Clear mandate for research in TDR target diseases;
- Institutional government support;
- Institutional leadership present;
- History of institutional stability;
- Integrated/linked to government public health mainstream programmes;
- Minimum core staff already available;
- Potential for national/regional training support;
- Potential for expansion and partnerships;
- Institutional national/regional credibility.

Integrating the Lines of business



R&D-driven capacity building (RCS-Plus)

3. Targeted support of TDR R&D priorities

This line of business is closely linked to the TDR R&D priorities as expressed by a corresponding product within TDR's product portfolio. The product portfolio (Expected Results A-D) is analysed by the Research Capacity Strengthening (RCS) staff, in collaboration with the product managers for these products, in order to determine the capacity building needs and opportunities for participation by DEC researchers, such that self-reliance in the relevant disciplines or fields of research might be achieved. Open or invited Calls for Applications may be issued when this fits with the R&D process in question. Brief feasibility studies may be undertaken before candidates are selected in collaboration with a sub-group of the RSG. The researcher or research group should be part of an institution which fulfils most, but not all, of the relevant elements for research self-reliance (page 10). Other factors, such as proximity to particular public health problems, including patient load, and previous experience in a similar R&D project, will also be taken into account.

By virtue of the nature of this line of business, the time frame is tied to that of the R&D product supported, usually between 1-5 years.

Support may include: needs assessment, group training and development of a research and capacity building plan with clearly defined outputs and milestones for achievements, and/or provision of support in the specific areas required (table on page 11). The RSG and relevant R&D steering committee will oversee implementation and achievement of milestones (for details see Annex A2).

Eligibility criteria for targeted R&D-driven capacity strengthening investment

- Institution/research group from a developing disease-endemic country;
- Minimum relevant skilled human resources and infrastructure available;
- Comparative advantages for undertaking the research;
- Potential for progress towards research self-reliance;
- Willingness to network and follow harmonized methodologies.

Risks



The attainment of research self-reliance depends not only on the support given, but also on a wide range of individual and contextual factors, such as political, social, and economic development of the society and or institution in which the support is given. There are considerable risks involved in the funding of research capacity building, particularly in LDCs. In order to reduce risk, the RSG will preferentially select grantees from more stable environments and provide close and long-term follow-up and monitoring of implementation and prevailing working conditions. The establishment of clear milestones and benchmarks for each grant will help limit losses by allowing timely correction to, or termination of, support.

TDR must be innovative and must be prepared to take risks to succeed in its capacity strengthening work. If ultimate success in each case is not achieved, it does not necessarily mean a failure. On the other hand, if no failures occur, it means that the Programme is not taking enough risks.

Line of business	Expected success ratios ⁹	Comments
Individual capacity building	<ul style="list-style-type: none"> 25% of the individuals supported for postgraduate training will develop leadership potential and produce results of national/international significance. 	Success here indicates that the individual goes beyond completing the training, i.e. beyond being awarded the intended degree. The ratio is small because knowledge about the individual will normally be limited prior to engagement.
	<ul style="list-style-type: none"> 50% of individuals enrolled in the 'leadership class' will develop 'leadership' and produce results of national/international significance. 	Much more should be known about the potential of the individual prior to engagement, as reflected in the higher ratio.
Institutional capacity building	<ul style="list-style-type: none"> 50% institutions enrolled will become competitive, and able to re-create research capacity, and will produce results of national/international significance. 	Extensive feasibility studies will be made prior to engagement, as costs are considerable. Reasons for non-success would normally be contextual.
Targeted capacity building in support of TDR R&D priorities	<ul style="list-style-type: none"> 60-70% of the researchers or research groups participating will produce results attributable to the support and will have increased their competitiveness. Capacity building for this line of funding will be targeted and the success criteria less comprehensive, thus the success ratio can be expected to be higher. 	Capacity building for this line of funding will be targeted and the success criteria less comprehensive, thus the success ratio can be expected to be higher.

⁹ See critical success indicators on page14.

Strategic Emphasis for Researcher-driven Capacity Strengthening for Least Developed and selected Low-Income Countries with high disease burden

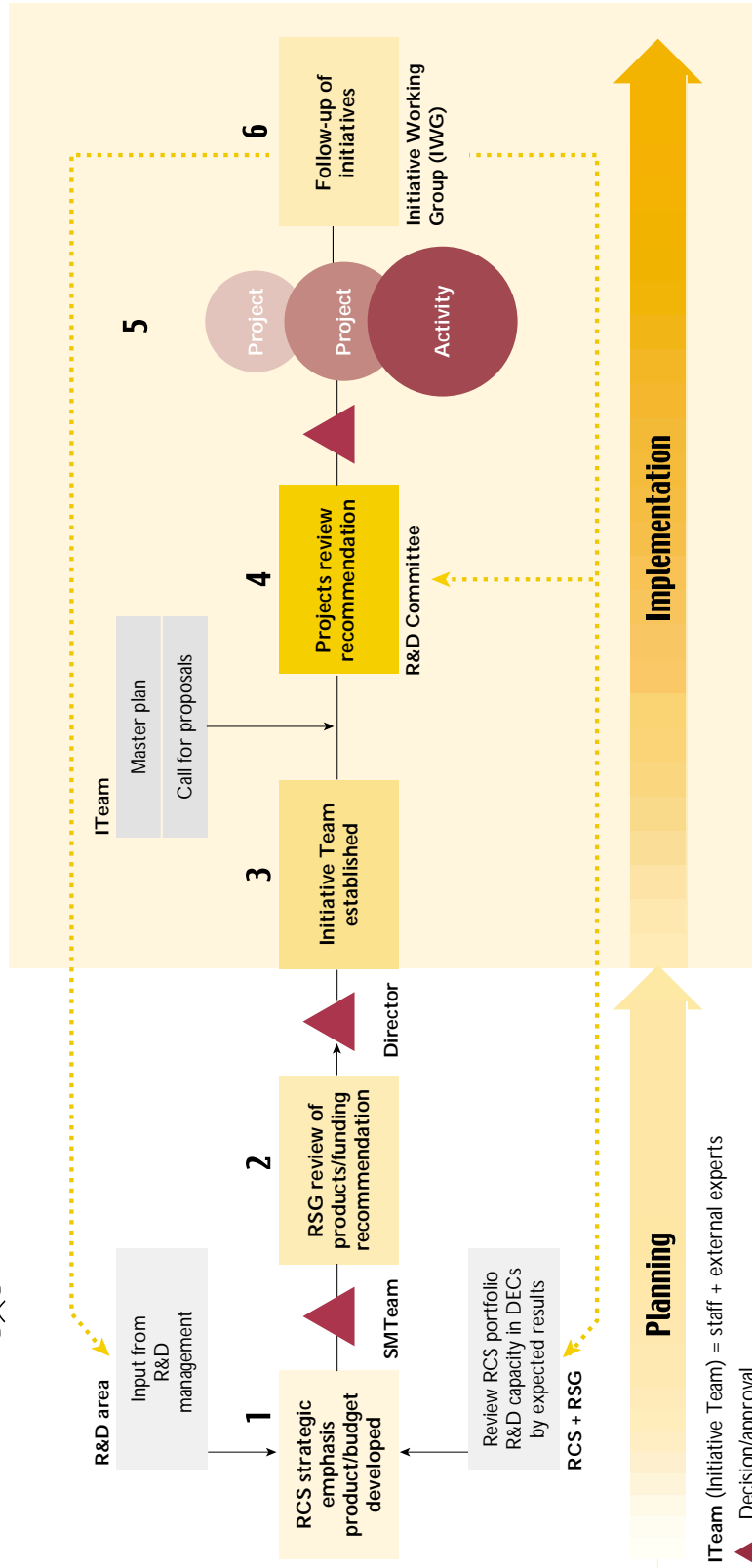
New basic knowledge	New and improved tools	New and improved intervention methods	New and improved policies
Overall capacity required			
<p>The generation of new basic knowledge requires: strong institutions, appropriate scientific autonomy, adequate infrastructure, sustained funding, trained human resources, research leadership, access to IT, state-of-the-art laboratory technologies, expertise including genomics, critical social science, and research collaboration.</p>	<p>Discovery/development of new and improved tools covers a wide range of research capabilities, from good research practices across laboratory-based disciplines, facilities for pre-clinical studies and experimental animal models, to clinical research including clinical trials in DECs according to good clinical practices and with strengthened ethical review processes.</p>	<p>The development of interventions requires competence in quantitative and qualitative research methods, including socio-economic-behavioural research. Proof-of-principle studies require expertise in controlled community-based intervention studies and close collaboration with control programmes.</p>	<p>The introduction of research results into policy and practices requires expertise in large-scale intervention, cost-effectiveness analysis, health systems, services and implementation research. Social sciences research is critical to sustained implementation of new public health policies. Implementation of new policies requires leadership, and good interaction between R&D and control staff.</p>
TDR Strategic emphases			
<ul style="list-style-type: none"> • Individual training, development of infrastructure and enabling environment; • Development plans for establishing R&D critical mass built on pre-existing programmes; • Collaboration with bilateral agencies. 	<ul style="list-style-type: none"> • Partnerships with DECs in discovery, preclinical/clinical development, and manufacturing projects; • Individual training in basic and applied disciplines, promotion of technology transfer; • Research leadership, ethical review process, managerial capacity. 	<ul style="list-style-type: none"> • Training in qualitative and quantitative methods and control-related disciplines; • Improved control/research interaction and research priority definition; • Development of DEC training capability and inter-institution collaboration; • Multi-disciplinary team building. 	<ul style="list-style-type: none"> • National research priority-setting; • Development of reference centres for pilot evaluation of large-scale interventions and new policies; • Development of research culture within the public health sector; • Multi-disciplinary team building.

Strategic Emphases for R&D-driven Research Capacity Strengthening (RCS-Plus)

New basic knowledge	New and improved tools	New and improved intervention methods	New and improved policies
Opportunities and advantages in disease-endemic countries			
<p>Technology transfer through N-S and S-S partnership projects. Application of high-tech procedures in clinical research due to proximity to disease. Under-exploited intellectual resources. Capacity to develop equitable bioinformatics expertise. Pro-active identification and promotion of research leadership.</p>	<p>S-S networking/multicentric trials to standardize methods and quality assurance of data in order to allow results to be compared directly. Development of reference collaborator centres in DEC. Research and training capacity utilization. Capability to fully engage in late-stage product R&D. Under-exploited laboratory and development skills capacity.</p>	<p>Self-reliance in identifying research needs and evaluating new or improved tools and intervention methods. Expertise in field studies and scaling up of interventions. Interaction with control programmes. Research and training capacity utilization. Potential close interaction between research and control.</p>	<p>Increased involvement of DEC scientists and control personnel/institutions in the evaluation and introduction of research results into policy. Need strong collaboration between research/control programmes. The proximity to diseases and their sociopolitical contexts facilitates the development of new strategies and policies.</p>
TDR Strategic emphases			
<ul style="list-style-type: none"> • Within-project training in socioeconomic-behavioural research, molecular biology, entomology, application of genomics to drugs and vaccines. • Molecular tools in pathogenesis of vector-parasite and host-parasite interactions • Development of genomics and bioinformatics 	<ul style="list-style-type: none"> • Technology transfer for development and manufacture • Partnership in chemistry/pharmacy and expression formulation • Preclinical/clinical R&D studies • Project-based good practices (GCP, GLP, GMP, ethics) • Engagement in drug, vaccine and diagnostics development • Training in intellectual property rights 	<ul style="list-style-type: none"> • Involvement in clinical and field evaluation of new drugs, vaccines, diagnostics and other intervention methods • Optimization of new drug regimens • Multidisciplinary team building • Optimization of new control methods 	<ul style="list-style-type: none"> • Within-project strengthening of public health and social sciences for developing strategies and policies for large-scale application of available tools • Capacity to evaluate innovative, integrated, intervention approaches • Multidisciplinary team building



RCS-Plus R&D-driven Initiatives: Decision process



ITeam (Initiative Team) = staff + external experts

▲ Decision/approval

IWG (Initiative Working Group) = combination of ITeams



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