4 Technology Transfer & System Optimisation

COHRED
Council on Health Research for Development

This is the fourth in a set of five guidance notes aimed at supporting research institutions with limited access to research contracting expertise in negotiating the terms of collaborative research contracts.

CAPACITY BUILDING should be viewed as more than a mere process of transferring knowledge, skills and technology from one partner to another. Taking a more sustainable approach, this process should be seen as **system optimisation** - an important process of active engagement by both partners to build the full capacity of institutions to produce, retain and use knowledge.

Collaborative health research partnerships are an opportunity for institutions to maximise their ability to access resources, produce, manage and carry out scientific research, promote, discuss and disseminate outcomes, use results effectively, implement and scale up their research endeavours and promote demand for research.

System optimisation occurs in research partnerships in both formal and informal ways. Some research partnerships are explicitly about this kind of activity whereas others partnerships see parties dynamically exchanging knowledge and skills as part of meeting the objectives of the joint research project.

TECHNOLOGY TRANSFER is a subset of knowledge transfer. In the context of research alliances and mutual exchange, it can be understood as a process of transferring know-how, skills and technology within the partnership. When examining activities aimed at building partner capacity or the transferral of technology and know-how between partners, it should considered how such efforts best fit the circumstances and needs of the partner institution.

KEY QUESTIONS TO CONSIDER - SYSTEM OPTIMISATION

Develop, involving all key personnel, a capacity-building plan or strategy:

- ☐ What are the capacity building needs of your institution? Consider using the COHRED capacity building grid to frame your approach to this question.
- ☐ What are the existing capacities that should be strengthened?
- ☐ What are the needs of your institution? Consider using the COHRED capacity-building grid (see illustration) to frame your approach to this question.
- ☐ Have you thought beyond opportunities to advance the careers of individuals, and included in your plan consideration of all aspects of your organisation's needs?
- ☐ How do you take capacity-building into consideration when selecting a partner for a project or partnership?
- ☐ To help alleviate the possibility of losing expertise when staff take on secondment opportunities at other organisations, consider entering, with them, into a simple agreement which includes the need to disseminate the knowledge they have acquired, and sets a minimum time they need to spend back at their home institution once the secondment has finished.
- ☐ Establish plans to share the results of the capacity-building activities and the lessons learned.

Capacity-building within a partnership:

- ☐ Is the project going to contribute toward advancing your organisation's own scientific, regulatory, medical and manufacturing abilities, and thus help to build the necessary sustainable infrastructure to further attract and absorb new technologies from other research partners, companies and industries?
- ☐ Have partners made an explicit commitment to build/strengthen capacity?
- ☐ How do the requirements of the partnership match your institutional capacity?
- ☐ What capacity (human resources, skills & knowledge, infrastructure & equipment, managerial & financial capacities) is required to carry out the work of the partnership?
- ☐ How will the partnership facilitate/complement the exchange of skills, knowledge and experience?
- ☐ If the partnership does not explicitly involve capacity-building, can activities which sustain the longer-term activities of your organisation be built into the research contract?
- ☐ If the capacity-building engaged in involves learning by training, consider in the agreement a work plan with the phases of training set out clearly. A new phase in training must depend on agreement from your institution. This strategy will allow your institution to both assess its own capacity and the procedure of transferring knowledge and to make adjustments as the process progresses.

What additional resources are anticipated and how might these be included?

- ☐ What resources and capacities might be required to manage project outcomes after the partnership has ended? How can these be built into the partnership agreement upfront?
- ☐ How can capacity-building efforts be harmonised across different partnerships?
- ☐ In the case of formal technology transfer, what additional capacities will your institution need in order to be able to negotiate and manage intellectual property rights and the related licenses?
- ☐ Does the partnership facilitate local ownership and control of research activities and outputs, and can this be aligned with your existing institutional strategies to strengthen the capacity of your institution?
- ☐ Are there opportunities for pooling skills and resources across local institutions/networks?

What will the extent of formal technology transfer be?

- ☐ Will technology transfer be informal (exchange of technical know-how, skills and experience) or formal (horizontal: licensed transferral of technology between institutions to enable partner institutions to use the technology for their own application and production; or vertical: assisting in the process of moving research results "from bench to market")?
- ☐ Based on the form of technology transfer, what will this require in terms of institutional capacity and procedures? How well is your institution equipped to absorb the know-how or technology?

COHRED'S RESEARCH CAPACITY STRENGTHENING (RCS) GRID

LEVEL OF DEVELOPMENT	FOCUS OF INTERVENTION / NATURE OF INTERVENTION	INDIVIDUAL	INSTITUTION	RESEARCH SYSTEM	SOCIO-ECONOMIC & POLITICAL	INTERNATIONAL COLLABORATION & LINKAGE
1	**'capacity building'**	master level training	grants management	basis of NHRS	increase demand for research	**good partnerships** (e.g. Align & Harmonisation)
2	**'capacity strengthening'**	doctoral level training	merit-based promotion system	research ethics review capacity	civil society engagement	**fair research contracting**
3	**'performance enhancement' * equity-focus**	networking researchers, peer reviews	research communication	monitoring & evaluation of output and impact	focus health, equity & soc-econ development	**focus on research competitiveness**

CASE STUDY

The Special Programme for Research and Training in Tropical Diseases (TDR) structures its research capacity strengthening activities according to the needs of each country/institution. TDR works on the principle that to achieve long-term outcomes, what is needed are comprehensive capacity-building programmes that provide continuing professional development, support, and an enabling environment, rather than scientific training alone. Research capacity strengthening (RCS) is both explicit and embedded in its programmes: "Everything we do is RCS, and we try not to waste any opportunities. Even if a scientific research project is being funded in the north, then we will try to bring in a fellowship for someone from the south" (Ghaffar, IJsselmuiden & Zicker, 2008, pp. 64-65).

KEYWORDS

TECHNOLOGY TRANSFER (TT)

has slightly different meanings in different contexts. It concerns the flow of knowledge, experience and materials from one partner to another. It can be horizontal, meaning the transfer of an established technology from one organisation to another to adapt and apply, or vertical, meaning the transfer of the outputs of R&D to application and commercialisation. It can be formal (licensed transfer of technologies) or informal (exchnage of knowledge, skills and experience)

A CAPACITY BUILDING PLAN

is an established plan within an organisation that maps out capacity gaps and needs, requirements for efficient absorpotion of provided capacity, and plans for assessment of the success of capacity-building activities.

Many companies, universities and governmental organizations now have Technology Transfer Offices (TTO), dedicated to identifying research which has potential commercial interest and strategies for how to exploit it.

CAPACITY- BUILDING

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CAPACITY

is the ability of people or organisations to manage their affairs and reach objectives successfully.

WHERE TO GO FOR ADDITIONAL HELP

- ESSENCE (2011). *Planning, monitoring and evaluation framework for capacity strengthening in health research*. Geneva: TDR/ESSENCE. http://whqlibdoc.who.int/hq/2011/tdr_essence_11.1_eng.pdf
- Ghaffar, A., IJsselmuiden, C., & Zicker, F. (2008). *Changing mindsets: Research capacity strengthening in low- and middle income countries.* Geneva: COHRED, Global Forum for Health Research and UNICEF/ UNDP/World Bank/WHO Special Programme for Research and Training in Tropical Diseases (TDR). http://www.who.int/tdr/publications/documents/changing_mindsets.pdf
- OECD (2006). *The challenge of capacity development: Working towards good practice.* Paris: OECD. http://www.oecd.org/dac/governance-development/36326495.pdf
- Resources available on the website of the Southern African Research & Innovation Managers' Association (SARIMA): http://www.sarima.co.za/
- An example of south-south technology transfer is the launch in 2012 of Africa's first fully public antiretroviral factory in Mozambique, in partnership with Brazil's Oswaldo Cruz Foundation. http://www.panapress.com/Brazilto-produce-ARVs-in-Mozambique---12-836035-66-lang2-index.html
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- White, M.T. (2007). A right to benefit from international research: A new approach to capacity building in less-developed countries. *Accountability in Research, 14,* 73-92. http://www.tandfonline.com/doi/abs/10.1080/08989620701290341?journalCode=gacr20

SEE ALSO http://www.cohred.org/FRC where you will find a useful guidance tool on developing and implementing guidance on research contracting, entitled: Where there is no lawyer:Guidance for fairer contract negotiation in collaborative research partnerships.

TIPS

- Develop a capacity-building plan involving all key staff, to identify the full needs of your institution, taking into account its impact on the wider community. Include in this plan an assessment of the outcomes of the process. Use this plan explicitly when developing research contracts.

QUOTE FROM A CONSORTIUM MEMBER

""The success of a partnership for technology transfer depends on having a contract in which clear and detailed rules on capacity-building are provided. It is important to think about the minutiae of the contract while keeping a broader perspective of the goals of your institution and country.

The discussion of a capacity-building strategy within your institution prior to the contracting stage is useful to ensure you select technologies that your institution is able to fully absorb.

By conducting research on similar partnerships, it is also possible to find out if the partner who owns the technology also holds the means or expertise to have it transferred – these are distinct skills.

Further, having a concrete strategy on capacity-building, which is reflected in successful partnerships, can also be a means to advocate for national adoption of policies which further encourage and fund Capacity-building."

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ACKNOWLEDGEMENTS

This work was supported by the African Health Initiative of the Doris Duke Charitable Foundation.

This guide was the result of a collaborative effort of the Fair Research Contracting Consortium members, a group of people from both low and high income countries and institutions. For full acknowledgement, please visit **www.cohred.org/frc**

FEEDBACK

This is the first version of this guidance note, and we constantly strive for improvement. In the next phase, we will be transforming these generic guides into a web-based decision support system. We would be pleased to receive your feedback, comments or suggestions for further improvement to these guides, or for the future of this project, to cohred@cohred.org

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V1.0: June 2014