

## CERN's Contributions to Capacity Development

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Education is listed among CERN's key missions, often described more generally as training. Development economists started talking in the 1990s about 'capacity building', and now prefer to emphasize the concept of 'capacity development'.

'Capacity building' refers specifically to investment in human capital, enabling individuals to realize their personal potential, whereas 'capacity development' extends this concept to include the development of systems and structures within their home countries that enable these individuals to work effectively there and contribute to the wellbeing of their compatriots. Capacity building could result in an expatriate with a PhD, whereas capacity development should result in durable institutions sharing best global practices.

CERN's education programmes certainly include many aspects of 'capacity building', including research experiences for undergraduate students, PhD opportunities, schools and training programmes for more advanced researchers. However, some of CERN's educational programmes extend beyond this. For example, our high-school teachers programme shares best practices in school education and aims at enhancing the awareness and take-up of scientific and technological training far beyond 'merely' producing high-energy physicists.

The high-school teachers programme can therefore be regarded as one step into 'capacity development', benefiting **national educational systems**, but many other CERN activities can also be seen within this framework.

For example, CERN assists many researchers returning to their home countries in building up **research groups** with international collaboration networks. Collaborative activities at CERN naturally **transfer knowledge** and **technologies** to these groups and their home academic **departments**, including in applied physics, electronics and distributed computing, which have many **applications in other fields**. Thus collaboration with CERN helps the broader development of academic **institutions**, also by engaging their **administrations** with international research networks. Collaborations at CERN are mainly financed by **funding agencies** that thereby gain experience in international relations, thereby sharing best practices in the **management of national R&D programmes**. (Associate) Membership brings with it participation in meetings of the CERN Council and its associated bodies, enabling **ministries** to participate on an equal basis in the management of a leading international scientific organization, gaining experience and credibility as full partners in setting global science policy. Membership also brings with it the right to bid for **CERN contracts**, with many benefits for national **industrial companies**, including references as reliable suppliers as well as developing their technological expertise.