



DUAL HIGHER EDUCATION MODELS

POTENTIAL FOR INTERLINKING TECHNICAL AND VOCATIONAL EDUCATION AND
TRAINING WITH HIGHER EDUCATION IN DEVELOPMENT COOPERATION

Discussion paper

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1 INTRODUCTION

The German Federal Ministry for Economic Cooperation and Development (BMZ) supports technical and vocational education and training (TVET) and higher education mainly through technical and financial cooperation projects. Cooperation in the field of education is based on the concept of life-long and holistic learning. Accordingly, BMZ supports activities across the whole education spectrum, from pre-school, primary and secondary education through to TVET and university education. The goal is to improve access to and the quality and relevance of education in our partner countries. Cooperation in higher education also aims to gear university education to the needs of the labour market. Support for dual study programmes through development measures can significantly enhance the employment-related impacts of higher education. For many years, BMZ has been promoting the establishment and development of vocational academies, dual study programmes and faculties in individual projects.

A study commissioned by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH examined the potential for closer integration between TVET and academic education in the development context taking vocational academies and dual higher education institutions as the frame of reference. The study is to contribute to the development of adapted and needs-oriented approaches to promoting practice-oriented and dual higher education. The first step entailed a detailed review of the development and present situation of

dual higher education in Germany, along with the current state of research on the international transfer potential of dual approaches in higher education. The second step involved an analysis of selected technical and financial cooperation projects in the field of dual and labour-market-oriented higher education with regard to strategies, success factors and obstacles. The study included an evaluation of the relevant literature and project documentation, interviews with programme managers and an expert discussion with representatives from academia, development cooperation, the private sector and universities offering dual education programmes. Based on the analysis, recommendations were drawn up for implementation in adapted form to developing countries at policy level and for project implementation.

This discussion paper summarises the results of the analysis. On the basis of the key findings, guiding questions were formulated to aid development policy-makers and the actors involved in the planning and realisation of dual higher education projects.

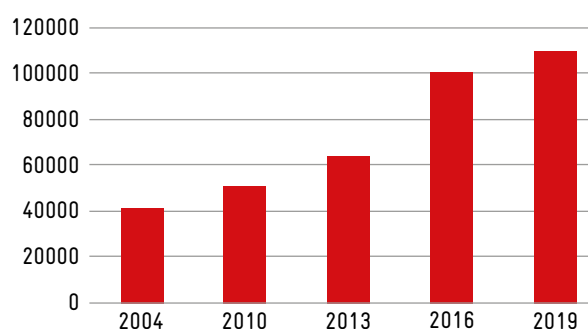
2 DUAL HIGHER EDUCATION MODELS IN GERMANY

The first universities of applied sciences (*Fachhochschulen*) and vocational academies (*Berufsakademien*) were established in 1969 and 1974 respectively as the result of a training initiative launched by private sector enterprises in Baden-Wuerttemberg. A dynamic development process was unleashed, giving rise to the diverse range of dual higher education institutions and initiatives in existence today. Dual study programmes in particular are experiencing an unprecedented upsurge in quantitative terms as a result of their inclusion in European and German qualification frameworks.

In Germany, over 1,600 dual study programmes are offered at initial training level (Bachelor) (1,662 in 2019), up from around 500 in 2004¹. The number of students in dual study programmes has risen from approximately 40,000 to over 100,000 in the same period.

In 2016, over 51,000 companies were involved in dual higher education programmes within the framework of in-company training.

Number of students in dual study programmes



¹ See here and in the following the German Federal Institute for Vocational Education and Training (Bundesinstitut für Berufsbildung), 2020.

In Germany, a large number of diverse formats are subsumed under the **term dual study**. In 2013, the German Science and Humanities Council therefore recommended introducing a uniform definition² and minimum standards (**constitutive characteristics**). The aim is to highlight the content-related, quality-enhancing aspects of dual study programmes compared to traditional courses of study on the basis of six key features³. Under the set definition, dual study programmes must comply with the requirements in at least the first three points described below:

1. **Relationship between learning venues:** The defining characteristics here are content-related, time-related and institutional integration, as manifested in formally agreed cooperation arrangements, joint committee work, inter-institutional guidance and support concepts, academic reflection, etc. It is recommended that at least 50% of course time be spent at the academic learning venue. Around two thirds of the credit points should be acquired through theory-based learning.
2. **Academic standards:** The academic training components must be in line with the scientific requirements of the course of study. Importance is attached to the required examination results, the relationship/relevance to research and the qualifications and composition of the teaching staff.
3. **Design of the practical components:** The duration of the practical phases, the intensity of the learning process and the quality of the training content offered by the workplace partner are important criteria here. The acquisition of skills at the workplace must be backed up by academic input so that they can be taken into account in student performance. Further criteria could include a mentoring infrastructure at the workplace and the possibility of obtaining a separate vocational/professional qualification.
4. **Benefits provided by the workplace partner:** This concerns the nature of the (employment) relationship between the student and the company and includes the provisions for remuneration and social benefits. Opportunities for follow-on employment and the possibility of completing practical phases in different companies or at different company locations can increase the attractiveness of the course.

5. **Support services offered by the universities:** In addition to imparting specialist/technical knowledge, the universities can provide a mentoring infrastructure, work-phase review modules and advisory/counselling centres for students on dual study programmes.

6. **Costs and financing:** This aspect covers possible tuition fees, which can be shared by students and participating companies.

The German Science and Humanities Council also recommends using the following categories for the various dual study formats⁴:

In initial vocational training (Bachelor):

- **Training-integrated** dual study programmes combine academic study with vocational training. In addition to the academic qualification, a recognised training qualification is obtained. Study phases and vocational training are closely integrated in terms of scheduling and content.
- **Practice-integrated** courses involve lengthy in-company practical phases that are credited in the study performance. The content of the university courses and the on-the-job training is coordinated. The course of study leads to a university qualification (e.g. Bachelor's degree).

In continuing vocational training:

- **Occupation-integrated** courses combine academic study with part-time professional employment. Professional activity and courses of study are linked up in terms of content.
- **Practice-integrated** courses require a prior vocational or academic qualification and subsequent work experience.

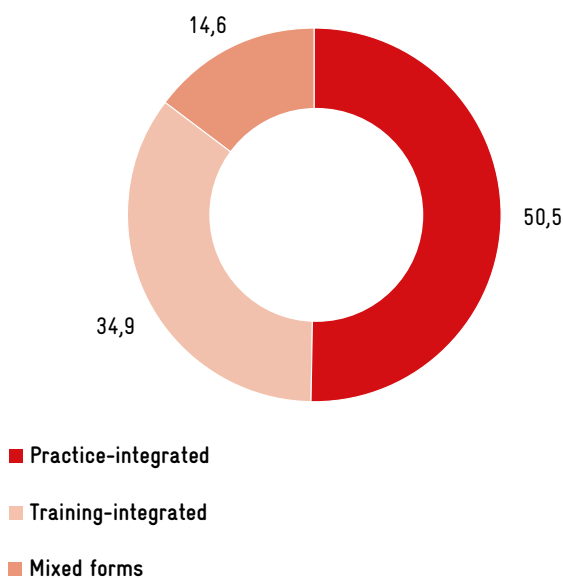
In initial vocational training 50.5% of the dual study programmes are practice-integrated and 34.9% are training-integrated. The remaining 14.6% are mixed forms of study that cannot be assigned to either category, for example because they can be undertaken in either a training-integrated or practice-integrated format.

² According to this definition, dual courses of study require the establishment of cooperation and coordination between at least two learning venues as well as formal recognition as an academic or academically-related course of study. The key characteristic of dual courses of study is the structural and content-related integration of the academic and practical aspects, which is laid down in cooperation agreements between students and companies as well as between companies and universities. See German Science and Humanities Council (Wissenschaftsrat), Berlin, 2013.

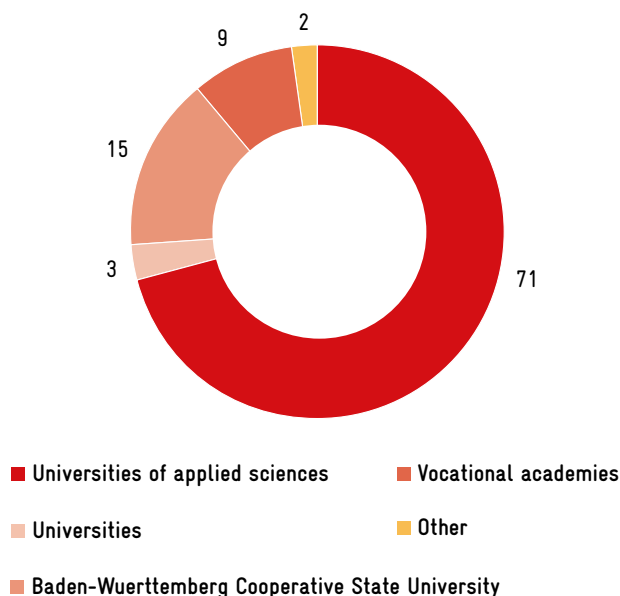
³ *ibid.* pp. 24-25.

⁴ *ibid.* p. 23.

Study formats



Distribution of study programmes between educational institutions



In 2019, about 71% of dual study programmes were offered by universities of applied sciences and only 3% by universities. Universities of cooperative education (duale Hochschulen) have a special status in this sector. These institutions offer 14.5% of all dual study programmes at the Bachelor level. State-run and private vocational academies offer around 9.1% of the dual study programmes. The dual study programmes focus on business and engineering sciences, mathematics and IT. These areas cover business needs⁵, as there is both an economic need and corresponding training occupations. In recent years, we have also seen a considerable increase in the importance of dual study programmes in the care, health and social welfare sectors.

More than 51,000 companies in the industrial and service sector in Germany participate in dual higher education programmes within the framework of **horizontal integration**⁶ – and the numbers are rising. They are actively involved in designing the curricula for the courses of study.

The intensity of their involvement varies considerably⁷. From the companies' point of view, participating in dual

study models primarily brings advantages with respect to in-house human resources, a situation partly characterised by the shortage of specialist and management personnel. This applies not only to large companies, but also to medium-sized enterprises, whose participation in cooperation arrangements is still relatively modest given their major significance for the national economy. The acceptance of dual higher education has been increasing in German industry and society in general. This can be seen as the result of long-term joint ventures between universities and the private sector and is reflected in the high level of demand for academic training programmes. These trends cannot be applied one-to-one to the partner countries of German development co-operation (see Section 3).

Vertical integration⁸ refers to the permeability of the education system and the crossover points between different educational levels, in particular from traditional dual TVET to university education. Students with vocational qualifications but without a High School certificate qualifying for university entrance are thus able to move on to tertiary education. However, admission is still most frequently gained

⁵ In Germany, there is a considerable demand for human resources in the MINT sectors (mathematics, IT, natural sciences and technology). According to a study conducted by the German Economic Institute, there was a shortage of over 100,000 graduates in MINT occupations in 2018. See German Economic Institute, 2018.

⁶ Horizontal integration refers to the institutional and curricular link between specialist theoretical and practical study, i.e. an integrative training concept. Particular attention is paid here to tertiary level cooperation models, for example between universities/institutes of higher education/vocational academies, companies and possibly other third-party institutions.

⁷ Recent surveys carried out by the German Federal Institute for Vocational Education and Training (BIBB) have confirmed that in some cases the teaching and learning content at the main learning venues (university, workplace) remains insufficiently integrated in curricula in Germany as well (see, Kupfer, Köhlmann-Eckel & Kolter, 2014).

⁸ Vertical integration refers to the crossover points and interfaces between different levels in the education system (secondary level, tertiary education). Here, the focus is primarily on the crossover between the traditional dual TVET system and university/higher education.

through the university entrance qualifications obtained at school⁹. Since the start of the Bologna Process, we have observed that the two subsystems – ‘dual higher education’ and traditional ‘dual TVET’ – have moved closer together, both in terms of structure and organisation. Experience shows that effective permeability between the two educational levels is most likely if there is a high degree of curricular compatibility between basic and continuing training in addition to an appropriate certification culture.

Experience from Germany shows that models such as vocational academies and dual higher education institutions are promising thanks to the synergies generated between the academic and practical formats and the close cooperation with actors from the world of work. On the one hand, they

have the potential to meet the companies’ need for more highly qualified personnel and, on the other hand, to offer school-leavers an alternative to traditional forms of training that is at the same time geared to the employment market. In addition to offering practice-oriented, hands-on training, special advantages include financial security, comparatively good conditions for studying and prospects for follow-on employment¹⁰.

3 TRANSFER POTENTIAL AND CONSTITUTIVE ELEMENTS OF DUAL HIGHER EDUCATION FOR INTERNATIONAL COOPERATION

German development cooperation has a tradition of transferring elements of dual TVET stretching back over four decades. Instead of **TVET system export** (the term originally used), we now speak of **education transfer in adapted form**.

In order to create the best possible transfer potential, the key outset conditions should be clarified prior to project implementation. A study conducted by the German Academic Exchange Service (DAAD) in 2014 identified the following **core dimensions for the adapted transfer** of dual higher education systems to other industrialised countries and emerging economies¹¹:

- The quantity and quality of the existing exchanges between Germany and the target country;
- An understanding of dual training models and the degree to which this understanding is established in the target country;

- The level of interest in promoting dual training models among decision-makers in society in general, the private sector and the political sphere (including upgrading through education-policy reforms and initiatives);
- The business environment in the target country, in particular the level of demand on the part of the companies represented at local level;
- The existence of enabling education-policy governance structures.

Based on experience in Germany, the form and structure of dual higher education can differ at operative level depending on the particular approach selected. According to a study conducted by the Bertelsmann Foundation, the approaches differ primarily in terms of how the dual principle is applied in practice: there are various combinations of learning venues, differing time allocations, and workplace phases are integrated in varying forms and levels of intensity¹².

⁹ see Nickel & Schulz, 2017.

¹⁰ see German Federal Institute for Vocational Education and Training (BIBB), 2013.

¹¹ see Graf, Powell, Fortwengel & Bernhard, 2014.

¹² see Euler, 2013.

Fundamental characteristics of dual higher education can be identified at operative and strategic level. Here, we draw on the integration aspects in dual higher education observed in Germany, and proceed on the basis of experience gained with the transfer to emerging economies and developing countries. The constitutive characteristics of dual higher education that could serve as a benchmark for the transfer

to partner countries (in particular developing countries) are summarised in the table below. However, when introducing dual higher education programmes or components, the concept of needs-oriented, adapted transfer should be in the foreground – as in traditional dual TVET and previous approaches to labour-market-oriented higher education.

Constitutive characteristics of dual higher education for partner countries

Institutional anchoring	• Expanding or, under certain circumstances, establishing vocational academies • Expanding universities and/or integrating new faculties • Establishing individual dual study programmes
Integrating the private sector in the design and implementation of the education process	• Business sector willing to cooperate • Interested international and domestic cooperation partners: companies or public institutions • Possible participation of key business associations and chambers • Inclusion of the private sector in university committees
Course profiles, practice orientation and curricula	• Introduction of practice-integrated courses of study, possibly also training-integrated courses • Focus on initial training (Bachelor, 5-6 semesters) • Course profiles geared to the labour market • Consistent practical orientation of training (at least 40%; integration of internships is often the first important step towards the dual form; however, this alone is not a definitive approach) • Coordinated and systematic curricular integration • Continuous alternation between theory and practice • Modular structure of the dual study programmes: basic and specialist modules • Dual continuing courses, preferably not until later phases of implementation
Cooperation between learning venues	• Close cooperation at organisational level (at least two learning venues) • Possible inclusion of further learning venues: inter-company training centre, several companies acting jointly
Teaching staff	• Qualified teaching staff and workplace mentors with a focus on practice-oriented dual study formats • Academic staff with practical experience • Pedagogical training and continuing in-service training for teaching staff and workplace mentors
Quality assurance – examinations, certification, accreditation	• Coherent examination system with a focus on practical skills • Certification culture (Bachelor, advanced courses of study, follow-on Master's degree in later phases) • Accreditation culture (appraisals, regular audits)
Students	• Courses appropriate to target group based on needs surveys conducted with employers and students • Flexible admission criteria (flexibility clause, credit transfers, procedures for determining aptitude)
Contractual regulations	• Contractually agreed cooperation between universities and companies (cooperation agreements) • Contractual relationship between students and employers (internship and training contracts); financial participation on the part of the companies (remuneration for training or internships, possibly tuition fees)

4 LESSONS LEARNED IN TECHNICAL AND FINANCIAL COOPERATION PROGRAMMES ON DUAL AND LABOUR-MARKET-ORIENTED HIGHER EDUCATION

German bilateral development cooperation has acquired a wealth of experience in promoting dual TVET and higher education oriented to the labour market. Within TVET programmes, dual higher education approaches are used to meet a specific part of the need for more highly qualified experts. We have been gaining experience in this area since the 1970s. Since the end of the 1990s, corresponding approaches or initial steps have also been undertaken towards establishing dual elements in the context of university projects. The focus is generally on improving the practical relevance and labour-market-orientation of the academic training.

As part of the analysis on which this paper is based, we examined 17 projects or measures concerned with dual or labour-market-oriented higher education in 13 countries (developing countries, emerging economies and countries in transition) as well as supra-regional projects in Eastern Africa and Latin America. The findings are presented in the following sections. By way of example, a dual higher education project in the Palestinian territories is presented in detail.

Case study: More job opportunities for Palestinian youth

BACKGROUND INFORMATION

- **Project term:** 11/2014 – 03/2023
- **Commissioned by:** German Federal Ministry for Economic Cooperation and Development (BMZ)
- **Project area:** East Jerusalem and the West Bank
- **Lead executing agency:** Ministry of Higher Education
- **National partner:** Al-Quds University



Youth unemployment is alarmingly high in the Palestinian territories. At the same time, companies complain of a shortage of **qualified specialists with practical training**. One of the aims of German development cooperation is therefore to gear higher education in the Palestinian territories more closely to practical needs and thereby boost employment impacts.

BRIEF DESCRIPTION AND IMPLEMENTATION STATUS

GIZ's project "More Job Opportunities for Palestinian Youth" supports the **establishment of dual study programmes** at Al-Quds University in East Jerusalem. The project currently cooperates with over **200 Palestinian partner companies**; further cooperation arrangements are in the pipeline. At present, **458 students are being trained in five courses of study**: business administration, IT, electrical engineering, industrial engineering and digital business. Around 125 new students are admitted to the dual study programme each year. The first graduates completed their studies in 2019. Under the dual courses of study, the students alternate between the university and the training companies during the workplace phases. The **combination of workplace training and university study** improves the students' occupational skills. The companies are obliged to take the students for six months in the academic year and to pay them a monthly allowance of at least USD 200. After **eight to nine semesters**, the graduates obtain a regular academic qualification equivalent to a **Bachelor's degree**. German companies also offer internships for selected students.

SUCCESS FACTORS

Feasibility studies to determine the specialist focus of the study programmes

At the start of the project, several **feasibility studies** were conducted and used to determine the **subject-specific orientation of the study programmes**. In this context, we examined which business sectors are in particular need of specialists and established where there is sufficient willingness to cooperate on the part of the private sector.

Practice-oriented training through cooperation with the private sector

Cooperation with the Palestinian private sector is a decisive success factor for the **effectiveness** of the project. In the initial phase of the project, larger – influential – Palestinian companies were brought on board, which rapidly enhanced the **model's reputation** within the local private sector. The **networks of these companies** were heavily drawn on in the subsequent expansion of the cooperation arrangements. The **positive image of the German dual study programmes** and the acute need for qualified specialists with practical training were conducive to achieving a high level of private sector participation. **Study trips to Germany** in cooperation with the Baden-Wuerttemberg Cooperative State University and German private companies have also proven an effective instrument for recruiting local partner firms.

Backstopping for the partner companies enhances the quality of practical training

In the careful **selection of partner companies**, particular attention is paid to their training capacities and working conditions. This enables us to ensure the appropriate **quality of the practical phases of training**. The companies are given close support, especially in the beginning. For example, international short-term experts and staff at Al-Quds University assist the companies in drawing up individual **training plans**. The company trainers acquire the requisite skills through cooperation with a GIZ project that provides **initial and continuing in-service training for teaching staff**. The in-company training content is set out in general training regulations; the teaching outcomes are assessed on the basis of report portfolios and student presentations. Ongoing compliance with training standards is guaranteed through regular visits by university staff to the training companies. In addition to university-based study and in-company training, relevant practical instruction is also given at **other learning venues**, such as workshops at universities or vocational training centres. As a result, all students have a similar level of access to modern technologies.

The involvement of the private sector in higher education facilitates the linking of theory and practice

The curricula for the dual study programmes were drawn up in close **cooperation with the private sector** to ensure that they are up to date and relevant to business practice. The inclusion of partner companies in teaching, e.g. through seminars, presentations/lectures and excursions, further enhances the **integration of theory and practice**. The combination of practical training and academic study enables students to acquire skills that will help them get a foothold in the labour market. At the same time, the higher social reputation of a university course – in comparison to traditional vocational training – contributes to the popularity of the study programmes.

Sustainable dual higher education through forward-looking financial planning

In order to guarantee the **continuation of the dual study programmes** beyond the project term, a **steering structure** was established at the university and supported by means of **capacity development** activities. To avoid jeopardising the sustainability of the measure, the salaries of the university staff are not financed from project funds. Instead, the organisation of the study programmes is largely financed from **tuition fees**. The willingness of the students to pay is achieved through effective PR campaigns and the solid reputation of the dual study programmes at Al-Quds University. **Disadvantaged students** may be eligible for reduced **tuition fees** or **grants** (for instance from private foundations).

CHALLENGES

Training costs can present a considerable challenge for smaller companies. To enable them to provide training nevertheless, students can train in up to **three companies** on a **rotation basis** during the practical phases.

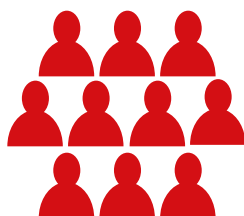
A further challenge for higher education with employment impacts results from **gender inequality** on the Palestinian labour market. In order to enable **female students** to make the successful transition into professional life, **workshops** and **individual counselling** are offered in later semesters.

LOOKING AHEAD

Other Palestinian universities are also very interested in the dual model. When **expanding the model**, care must be taken to avoid creating oversupply in individual study programmes. The quality of the courses must not be impaired as a result of competition between the universities. The project is therefore **advising and raising awareness** on this issue in the Ministry of Higher Education and the responsible **accreditation authority**. A conference is planned with representatives from the accreditation authority, universities and the private sector with a view to facilitating the coordinated expansion of the model in selected sectors.

LESSONS LEARNED WITH REGARD TO SOCIO-ECONOMIC NEEDS AND OTHER GENERAL CONDITIONS

In all education systems it is important to improve access to TVET and higher education as well to allow greater flexibility in moving between individual educational institutions.



In the partner countries of German development cooperation, the socio-economic conditions that determine access to secondary and tertiary education are without exception infinitely more difficult. We must differentiate in this context between the various gradations that apply to developing countries, emerging economies and countries in transition in the Eurasian region. People in marginalised social strata in particular have very limited access to higher education and generally depend on external support to assert their educational rights. In structural terms, many partner countries face high unemployment and under-employment among young people as well as high levels of informal employment. On the other hand, unmet needs in the business sector are indicative of a severe shortage of skilled labour.

One explanation is that social recognition for traditional forms of higher education is currently very high in many partner countries, and this applies especially to the STEM subjects (science, technology, engineering, mathematics). In some regions, for example southern Africa or the Caribbean, increases in student numbers must be seen in relation to a very low starting level. Although enrolments in sub-Saharan Africa have tripled since 1990, the enrolment rate of around 9%¹³ is still well below the global average. In other regions, universities that already have a large number of students are facing a veritable run on the places available.

In many places, there is a large discrepancy between the skills actually needed in the companies and the knowledge and capabilities of university-leavers. Potential employers complain of insufficient practical employability on the part of university graduates. At the same time, there is a kind of bias in academic circles against the importance of practical skills and the alignment of study programmes to the needs of the labour market.

By virtue of their approach, dual study programmes have the potential to trigger positive socio-economic effects in different target groups. These can take the form of gains in social prestige, positive employment effects, enhanced equality of opportunity via student loans or grants for disadvantaged target groups, professional advancement and improved income prospects. As dual higher education projects in development cooperation have so far been implemented on a model basis only, the results have been very limited. The programmes offered only reach relatively small and privileged target groups.

The analysis also showed that support for gender-sensitive approaches in the dual higher education system can raise the share of female students. At the planning stage, many projects aim for a 50-50 participation ratio, but this is not often achieved. Better results can be attained in future by focusing on the high participation of women students in specific vocations (50% – 80%). For example, in three dual study programmes at a vocational academy that is being supported in Albania, 62% of the participants are women. However, occupations in the metal technology (e.g. mechatronics) and industrial electronics sectors as well as in the construction and engineering industries have not been included in representative gender ratios to date.

¹³ UNESCO, 2018

In practice, when planning activities and defining objectives at the project design stage, the diverse socio-economic conditions in the partner country should be explicitly addressed. Here are some points for consideration:

- The acquisition of competences by the students is aligned with and adapted to needs and the demand from the business sector.
- Competence acquisition is hands on (e.g. through a high proportion of practical training in the study programme).
- Applicants and students with basic knowledge gaps receive continuous and appropriate support and advice (e.g. preliminary courses, tutorials and mentoring).
- The application procedures for dual study programmes are appropriate to the target group (e.g. through aptitude checks, tests, credit transfers).
- The reasons for high drop-out rates are evaluated and analysed so that countermeasures can be taken.
- Financing models are implemented to ensure that students are generally able to concentrate on their studies without having to worry about supporting themselves. Options here include grants, student loans, remuneration for training, assumption of tuition fees and other material benefits.
- Image campaigns provide information on the potentials and prospects offered by dual higher education programmes and the advantages of training with a practical relevance.

The analysis of the development cooperation initiatives in the field of dual higher education reveals clear differences at the structural and specialist or content-related levels. Although we are dealing here almost exclusively with individual model projects, these are embedded in highly diverse legal and institutional frameworks. Experience shows that effective dual higher education builds wherever possible on existing TVET structures and is geared to the specific circumstances on the labour market (demand for specialists). At the concept development stage in new projects and depending on the approach, it is important to keep in mind the institutional, economic and socio-economic conditions at local and regional level.

The successful implementation of dual study programmes critically depends on interest on the part of one or more universities and a business environment that is willing to cooperate. A differentiated perspective is called for with a multi-level approach as the normative conditions for the design

often diverge significantly and difficulties may be encountered with regard to higher education law. German technical cooperation has so far gained comparatively little experience in this respect in the area of tertiary education.

In this connection, we can also state that fragile statehood in a growing number of partner countries is not generally considered an obstacle to development cooperation engagement in dual higher education (e.g. in the Palestinian territories). This applies in particular if the various conditions (structural, institutional, legal, economic and socio-economic) are identified at the different levels (micro, macro and meso) at an early stage. It is possible to minimise the associated implementation risks in this manner.

In the start-up phase of each project, baseline data should be collected and evaluated to facilitate the sustainable design of the measure. In addition, the socio-economic conditions and their further development should be classified and evaluated more precisely and empirically substantiated to a greater degree¹⁴.

LESSONS LEARNED WITH REGARD TO PRIVATE SECTOR INCLUSION

The level of awareness of systematically organised cooperative training in vocational and higher education programmes has risen markedly in the key business sectors of some developing countries and emerging economies, such as Viet Nam, Mexico and Mongolia. Growing interest in dual TVET approaches in the tertiary sector has significantly improved the conditions for implementation in these partner countries.

To date, the inclusion of private sector companies in dual higher education programmes has been chiefly characterised by the participation of (a still limited number of) medium-sized and large enterprises. While small and medium-sized enterprises (SMEs) are involved in designing dual study programmes, they are reaching the limits of their capacity. This is because small and micro enterprises are hard pressed to ensure high-quality and systematic in-company training. They nevertheless play a pivotal role in the business landscape in many partner countries.

Companies in partner countries repeatedly express the need for more highly qualified specialists with hands-on skills and a practical focus. Often, however, the companies in question show a lack of initiative in terms of offering suitable



¹⁴ see guiding questions in Section 5: Guiding questions for planning and implementing projects.

solutions and helping to develop them. One possible reason is that SMEs do not have the necessary resources to implement longer-term training strategies. The options available for participating in cooperative higher education measures are taken up only hesitantly in practice. Here, we must plan and implement activities to win over the relevant actors.

We have observed that the conditions for cooperation differ considerably as a result of the varying numbers of participating companies in our partner countries. In addition to the integration of local SMEs and large companies, the participation of German firms working in the area has proven to be a beneficial factor in successful or promising dual higher education programmes. As members of the German Chambers of Commerce Abroad (AHK), they are proactive and contribute their exemplary in-company training practices to the dual study programmes. Large companies in particular, for example VW Puebla in Mexico or Continental Manila¹⁵ in the Philippines, are keen to participate in local cooperative TVET initiatives. Even if they often opt to maintain their own training centres, this does not exclude their participation in dual study programmes.

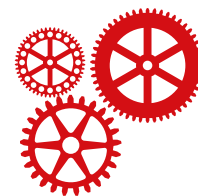
LESSONS LEARNED WITH REGARD TO INTEGRATING ACADEMIC AND PRACTICAL TRAINING

As described in Section 2, the interlinking of TVET with higher education can be viewed systemically, from both a vertical and a horizontal perspective¹⁶. With regard to horizontal integration, experience gained in partner countries indicates that the organisational co-operation structures between universities and the private sector in the context of dual higher education programmes are either non-existent or poorly developed. In addition, companies generally demonstrate a low level of awareness, willingness and motivation to invest in human capital. In practice, it is therefore important to start by bolstering the willingness of universities and companies to form networks and to create communication and coordination structures.

In general, very little experience has been gained with curricular integration in the partner countries. University teaching and learning components are mostly very academic with little consideration given to practical aspects. Companies often have no training plans or curricula at all – model projects apart. At company level, improvised training models have the upper hand; at best, short internships offering a modicum of systematic instruction are available.

In the development cooperation projects examined, the combination of (subject-specific) theoretical and in-company practical training in roughly equal parts has proven workable. Training can be organised in alternating blocks or phases, or run in parallel. Another option is to link the course of study with part-time work, which corresponds to the 'practice-integrated' model.

There are also challenges to be faced with regard to vertical integration. In partner-country education systems, the points of transition between secondary education (and especially non-formal TVET) and tertiary education are largely unregulated. Among other things, this hinders upward movement in the sense of barrier-free learning.



¹⁵ Continental Temic Electronics has its own training facility (similar to a university of applied science) in Calamba, Philippines that offers dual study programmes (for its own employees).

¹⁶ Horizontal integration refers to the institutional and curricular link between (subject-specific) theoretical study and practical training. Vertical integration concerns the crossover points and interfaces between different levels in the education system (secondary level, tertiary education).

LESSONS LEARNED WITH REGARD TO INSTITUTIONAL ANCHORING AND INTERNAL QUALITY ASSURANCE

In our partner countries the organisational and integration models of educational institutions offering dual programmes are heterogeneous, which is similar to the situation in Germany. At the intervention level, we must therefore differentiate between the following forms¹⁷:



- Establishing or expanding **faculties** at universities or elsewhere in the tertiary sector;
- Implementing dual **study programmes** at universities;
- Establishing new, mostly technical **institutes or academies**.

At present, most of the few development cooperation projects with dual higher education approaches are supporting the establishment of facilities similar to vocational academies. In some cases, the vocational academies based on the German model are only recognisable as such by virtue of their internal course structure. The characteristics include a general Bachelor qualification, a 50-50 rule with regard to the division between theory and practice, emphasis on practical work experience through to proximity to the workplace. Other development cooperation projects support institutional forms that integrate dual study programmes into existing or new faculties (in the form of a centre) at traditional universities. These centres either have special status and can operate relatively freely or are subject to the management instructions of the associated university.

The surveys indicate that the official names of the institutions involved in dual higher education abroad do not always accurately reflect the concept of the training implemented. This applies in particular to the terms 'dual vocational academy' and 'university of applied sciences'. In some cases, the names are not given or chosen rigorously as the partners want labels that suggest orientation to the German system. It is therefore important that the 'dual' label does not lose its substance, conciseness and distinctive strategic meaning despite the diversity of dual higher education initiatives in the development cooperation context. Not all courses of study that offer company internships can be characterised as 'dual'. In this respect, the constitutive characteristics of dual higher education as outlined above serve as a helpful guide.

Furthermore, lessons have been learned with regard to steering responsibility in cooperative training, which in most cases is assumed by universities or academies. Successful implementation results, which may indeed be significant, have mostly been restricted to defined local environments. Apart from the (to a greater or lesser degree) autonomous institutions (such as academies, institutes and faculties), this applies to a small number of companies whose participation has been verified, and a few courses of study.

Implementing dual university study courses abroad requires consistent support for an effective accreditation system from the outset. Sufficient relevant structures are often not yet in place in developing countries, which may be due to the partly heavy burden (high fees, additional workload, etc.) to be borne by universities for course accreditation. Among the projects that were examined, positive examples were found in the Palestinian territories, where the presence of a local professional accreditation body has spawned a top-flight culture of accreditation. In the accreditation process, the qualifications to be awarded must also be incorporated into the respective national qualifications framework. The experience gained by EU countries since the Bologna Process offers potential for further measures, for example in the area of certification of student performance (qualifications, European Credit Transfer and Accumulation System).

In many areas, dual higher education is characterised by evolving processes (new occupations, innovative integration models and curricula, financing strategies, etc.). If monitoring and evaluation systems are implemented adequately and interventions undertaken within the scope of external audits, it will be possible to ensure that innovative adaptations, which will be necessary on a regular basis, are made in the medium to long term. In turn, this will secure the quality of the general study conditions and study programmes on a sustainable basis.

LESSONS LEARNED WITH REGARD TO THE USE OF INSTRUMENTS AND FINANCING

Project experience to date highlights the significant role played by long and short-term experts, integrated experts and human capacity development (HCD) measures. Long-term experts from Germany have been assigned to several projects. Integrated experts have been assisting them in their work, especially with technical advisory services and course design, subject-specific curricular work and support for cooperation with the learning venues. In some instances, the integrated experts have taken over these tasks fully in the later phases.



¹⁷There are also a few special cases such as the foundation university (AKU) in East Africa, technology centres and a business college.

The integrated experts are sometimes affiliated with the German Chambers of Commerce Abroad or often with the universities involved. Occasionally, via DAAD, university cooperation arrangements have been used to advise and support universities in partner countries with curricula development and in-service teacher training.

In the projects examined, HCD measures are a central element in the training of partner experts. This training includes study trips to Germany during the planning phase. The aim is to give partner experts and managerial staff from ministries, universities and companies a better understanding of the concept and the advantages through visits to vocational academies, universities of applied sciences and to participating companies. In the implementation phase, practice-oriented further-training programmes are offered for managers, lecturers and trainers. The aim is to build and consolidate knowledge and competences with respect to technical expertise, course development and practice-oriented didactic methods in universities and companies. Other areas covered

include methodological expertise and strategies for networking and shaping cooperation between learning venues.

Lessons learned in the area of student financing reveal marked differences between the German and partner-country models. Students participating in dual programmes in Germany currently receive financial support of between EUR 400 and EUR 1,200 per month and possibly other benefits. Exceptional cases apart (e.g. a consortium of companies that views training remuneration as an investment in human capital), start-up and impulse financing is needed at an early stage in most partner countries. This can take individual forms depending on the country and the local circumstances. In practice, it has so far often proven difficult to introduce appropriate remuneration to be paid by the participating companies for internships and training.

5 CONCLUSION

RECOMMENDATIONS FOR ACTION FOR GERMAN DEVELOPMENT COOPERATION

The following recommendations for action were drawn up on the basis of the analysis.

- 1** The high level of demand for practice-oriented training and higher education with beneficial employment effects in Germany, Europe and the partner countries of German development cooperation can be strategically leveraged for new dual higher education projects. We should aim to implement further projects in this field.
- 2** The recommended duration of development cooperation projects in the field of dual higher education is around six years. As a rule, initial courses of study (Bachelor) last three to four years. Added to this are the lead times for course development with local partners, the implementation phase itself as well as monitoring and evaluation. Due to the length of the courses, higher education can generate labour-market effects only in the medium term. Dual higher education projects should therefore be granted a corresponding duration to allow the employment impacts to be verified.
- 3** It is important to analyse the business environment prior to project implementation. The specialist focus of the courses should be determined on the basis of feasibility studies that examine labour-market needs and training capacities in individual sectors.
- 4** With regard to the practical share of the dual study programmes, workplace learning in the sense of the 'dual' label should account for at least 40%. It is essential to ensure curricular integration between learning venues, i.e. the company and the university.
- 5** Priority should be given to offering practice-integrated Bachelor's courses with intensive and continuous feedback between the training companies and the universities. Dual further-study programmes in the form of follow-on Master's degree courses should be tackled in a later phase.

- 6 Permeability (between different levels) in the education system is a critical quality criterion. From the outset, Bachelor's degree courses must be designed so as to allow students to be admitted to follow-on courses or advanced training. At the same time, the possibilities for crossing over from TVET at the secondary level to dual higher education must be kept as open as possible. It is important to avoid competition between the TVET and dual higher education systems. The long-term objective is to link traditional TVET and dual higher education in a 'joined-up' approach.
- 7 Students in dual study programmes should rotate between universities and companies during their training. Additional learning venues, such as inter-company training centres, external laboratories and workshops, enable standardised access to technologies during the practical training phases. These venues should therefore always be examined as a strategic option, depending on the local circumstances.
- 8 Distance learning and self-directed study, for example via digital modules, learning platforms, e-learning and blended learning, are gaining importance both in Germany and internationally. In future, these study forms should be accorded greater attention and always examined as an additional, alternative learning strategy in the adapted transfer to developing countries.
- 9 Apart from staff specialising in teaching theory, who are generally available at universities in the partner countries, dual study programmes above all need teachers and trainers who can provide hands-on, skills-oriented instruction. At the universities, these can be lateral entrants from the private sector, where permissible. To ensure the provision of appropriate pedagogical support for the learning processes, specific further training courses are needed for in-company training staff.
- 10 Integrating companies in the dual higher education system and winning over the relevant actors poses a major strategic challenge. When establishing dual study programmes through development projects, the positive experience with dual higher education in Germany should be emphasised in efforts to bring local cooperation partners on board. The beneficial impacts of dual higher education on competition and employment are key arguments in the recruitment of cooperation partners.
- 11 Large domestic and foreign companies can play a pioneering role in implementing dual study programmes and provide considerable impetus. However, it is important to ensure a balance of interests between training designed to meet in-company needs and training needs in the wider context. To facilitate professional mobility, it is vital to ensure the transferability and recognition of the competences and qualifications acquired.
- 12 Domestic SMEs – as an institutional target group – should be included to a special degree in dual higher education approaches. Their participation can be increased by adapting in-company training phases to the needs of smaller companies. Splitting the workplace learning phases between several enterprises is one way of reducing company training costs and encouraging smaller SMEs to become involved in dual study programmes.
- 13 To promote equal opportunity, adequate support for financially disadvantaged students should be standard when implementing dual study programmes. Instruments such as grants, exemption from tuition fees and remuneration during training should be consistently applied in new projects. However, the appropriateness of training remuneration needs to be examined while bearing in mind the companies' capacity to pay and the sustainability of the measure.
- 14 The quality assurance of dual study programmes is closely related to the accreditation system. In addition to the challenges associated with establishing new training facilities, maintaining the quality of training through formal means places significant demands on the accreditation system. Dual higher education projects should therefore be linked to a corresponding accreditation strategy.
- 15 The proposed guiding questions to be considered when planning and implementing dual higher education measures (see page 18) should be continuously adapted in line with the lessons learned in the corresponding projects and applied when designing individual projects. To this end, it would be useful to produce a technical manual based on the guiding questions for project planning and implementation.

GUIDING QUESTIONS FOR PLANNING AND IMPLEMENTING DUAL HIGHER EDUCATION PROJECTS

I. Guiding questions in the run-up to the project

- 1 What data are available in terms of analyses and forecasts of economic and labour-market development, unemployment, youth employment and graduate tracer studies at national and regional level?

What national and regional development plans and strategies exist in the areas of labour-market development and youth employment?
 - Is there a **need** to improve employability among more highly qualified specialists that could be met through dual higher education?
 - What specialisms and occupational fields are needed in which business sectors? Is the need temporary (e.g. raw materials sector, construction sector) or ongoing?
 - Are they regional or national in scope?
 - How can dual higher education be incorporated in the respective BMZ country strategy?
- 2 How would you describe the **higher education landscape**? To what extent is higher education geared to application and practice? Which higher education institutions could be considered for inclusion?

Analysis of higher education institutions with respect to:
 - type and status (e.g. vocational academy, university of applied sciences, university, technology centre),
 - reach or number of students,
 - course profiles,
 - experience with practical orientation,
 - cooperation arrangements with the private sector,
 - teaching staff capacity,
 - admission requirements and qualifications.
- 3 Is there a functioning **TVET system** in the country? How is it organised?

Are there any ongoing cooperative TVET approaches locally (at secondary education level) that could serve as a basis for a project?
- 4 Is there a recognisable **willingness to change** towards labour-market and practice-oriented higher education among political and institutional stakeholders in the education sector and the world of work?
- 5 How well are **dual vocational education approaches** understood on the partner side in the higher education sector, in the TVET sector and among employers (private sector, public sector)?

Is there any experience of working with dual TVET approaches?
- 6 Are potential partners in the higher education sector **willing to cooperate** with the business sector or other employers and TVET actors (companies, skills centres, inter-company facilities, business chambers)?

Are local employers (business sector, public sector, etc.) willing to cooperate with universities?
- 7 What are the potentials of the **target group** with regard to level of training/qualifications of the potential applicants (including language skills), mobility, financial aspects, expectations of university education/interest in practice-oriented higher education with employment-relevant qualifications?

What **obstacles** could possibly hinder the participation of individual target groups in dual higher education?
- 8 What **risks** are connected with the implementation of a dual higher education project?

II. Guiding questions for project implementation

General conditions

Normative or macro level

- 1 How can dual study programmes be integrated into the existing education system in the partner country?
 - What is the nature of the legislation applying to the TVET and higher education sectors?
 - With which bodies (ministries, downstream authorities, etc.) will cooperation be required in approaches at the interface between TVET and higher education?
 - What forms of cooperation culture are there at governance level? How can links be forged here?
 - How are the crossover points between the secondary level and TVET/higher education organised?
 - Is it possible to cross over from TVET to higher education (permeability)?
 - What requirements (accreditation) must be taken into account with regard to the recognition of qualifications?

Awareness raising

- 2 How can governance structures be used to strengthen political and public support for establishing dual higher education services?
- 3 What measures can be used to familiarise educational institutions and employers with the opportunities, challenges and benefits of dual higher education and to persuade them to engage in cooperation (e.g. by presenting best practices, through cost-benefit analyses, study trips, support for joint processes to develop ideas, etc.)?

Institutional anchoring and cooperation

- 4 How can dual study programmes be integrated into the institutional setting (as vocational academies, as faculties, as individual courses of study, other)?
- 5 How can cooperation between educational institutions, employers and business associations be organised? In this context, how can sustainable cooperative structures be established?

How can SMEs be integrated into cooperative structures and their training capacities strengthened in the process?
- 6 How can the contractual regulations for dual courses of study be formulated taking into account the formal and legal frameworks (cooperation agreements, training contracts, training regulations, standards)?

Target groups

- 7 How will the dual study programmes be geared to target group requirements on the basis of the needs surveys?
- 8 What admission criteria will apply to students with final school leaving certificates qualifying for university entrance?
- 9 How can access to dual study programmes be made easier for disadvantaged target groups?
- 10 What measures can be considered in order to increase the flexibility of admissions (flexibility clause, credit transfer procedures, aptitude assessment procedures, preparatory courses, recognition of skills acquired non-formally or informally)?

Quality	
Course design	
11	How exactly should the theoretical and practical elements of the dual study programme be integrated and implemented (regularly alternating theoretical and practical components, modular structure, coordination of learning targets and courses offered)?
12	What infrastructure will have to be in place at the educational institutions and partner companies (classrooms, laboratories, workshops, etc.)?
Human resources	
13	What is the quality of existing courses with a view to their possible use for dual study programmes (specialist and pedagogical competences, teaching and learning content, modern didactic methods, etc.)? What training and/or advisory requirements arise as a result?
14	What minimum requirements are to apply to teaching staff, trainers, instructors, tutors and training coordinators?
15	What training courses (initial and further training) must be developed in order to address the deficits and/or needs of teaching staff, trainers, instructors, tutors and training coordinators?
Certification and accreditation	
16	What qualifications are to be awarded (diploma, Bachelor, Master, further/advanced training certificates)? How will recognition be guaranteed?
17	How will dual study programmes obtain accreditation? What accreditation procedures must be developed and introduced (appraisals, regular audits)?
18	How should the examination system be designed and coordinated for the theoretical and practical training elements (coherence, focus on competences, assessment criteria)? What training needs might arise in this context (e.g. for in-company training coordinators)?
Costs and financing	
19	What are the costs of the dual study programmes and how are these to be covered over the long term (budget/business plan)?
20	How is the financing of the dual study programmes to be secured through the participation of: • ministries/universities • the private sector • students • government support as a contribution to equal opportunities (e.g. grants)?
21	What external financing instruments are to be employed if necessary in the start-up phase (subsidies, grants, student loans, etc.)?

ANNEX: SWOT ANALYSIS



Strengths

- Some courses of study serving as models have been set up successfully. In those implemented successfully, the close integration of specialised theoretical elements at the university and practical elements at the training companies is evident to an extensive degree (in terms of curricular and technical/organisational coordination).
- Some Bachelor's degree courses have been successfully implemented.
- Bachelor's degree courses similar to those offered by vocational academies are the most convincing.
- The courses generally resulted in good to very good professional qualifications (more highly qualified specialists).
- As far as ascertainable, follow-on employment rates were generally high (employment effects were modest, however, when measured against the overall potential).
- The inclusion of national and international companies, especially in industrial regions, is successful and intensive.

Opportunities

- Positive effects can be achieved in particular if dual higher education projects are implemented in countries or regions that already have well-developed TVET systems and relevant experience at secondary level gained through development cooperation projects.
- In some projects in the GIZ portfolio, strategic advantages are emerging in that they offer an alternative with employment-related impacts to purely academic studies. However, little experience has been gained in this respect to date. We assume that other countries will also be able to increase practice orientation in higher education.
- Once an initial (Bachelor level) dual higher education system is in place as a basis to build on, it may be expedient to introduce postgraduate courses.
- Model initiatives could be rapidly implemented through development partnerships with the private sector. Such initiatives should be pursued in combination with technical and financial cooperation measures. To date, too little experience has been gained with this facility in dual higher education programmes.



Weaknesses

- Experience with development cooperation-projects in this field is still insufficient.
- There is still a general lack of motivation and inclusion, especially on the part of local companies.
- Not enough tracer studies are available to assess the employment effects of dual-higher education.
- There is not enough baseline data on the participating companies and on the business potential in the environment of the prospective universities.
- The laws governing TVET and higher education are not sufficiently harmonised (deficits in the normative area at macro level).
- So far, there are very few inter-company-training centres and higher education programmes involving several companies in one course of study. However, such centres and programmes would be important to compensate for the lack of training capacity, especially in smaller companies.

Threats

- When new academies and faculties are established, there is a danger of underestimating the ingrained conservatism of the universities and the requirements stipulated under higher education law (licences, accreditation).
- Without the proactive participation and inclusion of the national education and labour ministries, project implementation is likely to be a solitary undertaking with an uncertain outcome (i.e. limited results).
- The limited number of financial cooperation projects in the field of dual higher education indicates that the importance of infrastructure measures has not yet been adequately addressed in project design. There is a danger that the equipping of universities could be neglected unless the partners provide the necessary inputs themselves (laboratories, university workshops, classrooms, etc.).
- If integration measures are not adequately addressed, there is a danger that students from marginalised population groups will be excluded.



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