

**OECD/CERI STUDY OF SYSTEMIC  
INNOVATION IN VET**

**SYSTEMIC INNOVATION IN THE  
MEXICAN VET SYSTEM  
COUNTRY CASE STUDY REPORT**

**OECD/ CERI  
June 2009**

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## **SYSTEMIC INNOVATION IN THE MEXICAN VOCATIONAL EDUCATION AND TRAINING SYSTEM: COUNTRY CASE STUDY REPORT**

### **INTRODUCTION**

This is the sixth and last in a series of country reports prepared as part of the study on Systemic Innovation in Vocational Education and Training (VET) being conducted by the OECD's Centre for Educational Research and Innovation. The overall objective of the study is to examine the innovation system in VET which conducts the generation, introduction and implementation of systemic innovations in six different countries<sup>1</sup>. The definition of systemic innovation adopted from this report is "any kind of dynamic, system-wide change that is intended to add value to the educational process and outcomes".

The study will bring evidence of the drivers and barriers facilitating systemic innovation and will particularly focus on understanding how Mexico goes about generating systemic innovations and the process involved, with a special emphasis on the relationships between the main actors, the knowledge base that is drawn on, and the procedures and criteria for assessing progress and outcomes.

This report focuses on three cases of systemic innovation that illustrate the Innovation System in Mexican VET: (1) Reform of the Technological Baccalaureate; (2) the Upper Secondary Integral Reform; and (3) Linking public and private resources to improve worker preparation and training in the Mayan Riviera.

In order to fulfil the objective of this report, the team benefited from different sources of information. More precisely, the information presented in this report was gathered through: a) background information provided by Mexican officials on the situation on the innovation system in VET in a purpose-designed questionnaire, and on the three case studies, b) meetings and interviews with a broad base of VET stakeholders conducted during a visit to Mexico between 11-19 November 2008 and 17-18 March 2009, and c) other background material on Mexico and the country's VET system.

The visiting team consisted of Hanne Shapiro, Head of the Business Centre at the Danish Technology Institute, Manuel Souto-Otero, lecturer in Education at the University of Bath, and Beñat Bilbao-Osorio and Vanessa Shadoian from the OECD/CERI Secretariat for the November 2008 visit, and Manuel Souto, Beñat Bilbao-Osorio and Francesc Pedró, from the OECD Secretariat, for the March 2009 visit. During the country visits, the team met with several stakeholders involved in the VET system in general, and included representatives from the Federal and State governments, the research community, the business sector, trade unions, teachers and students. A complete list of participants is included in the Annex.

The report begins with a brief overview of the Mexican VET system, as well as the main drivers, institutions and policies aiming at fostering systemic innovation. The next section will present in detail the three selected case studies. In the final section the report will draw the most important conclusions from

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<sup>1</sup> Australia, Denmark, Germany, Hungary, Mexico and Switzerland

the analysis and will provide a set of policy recommendations to improve the innovation capacity of the VET system.

## **THE VET SYSTEM IN MEXICO**

### *Context*

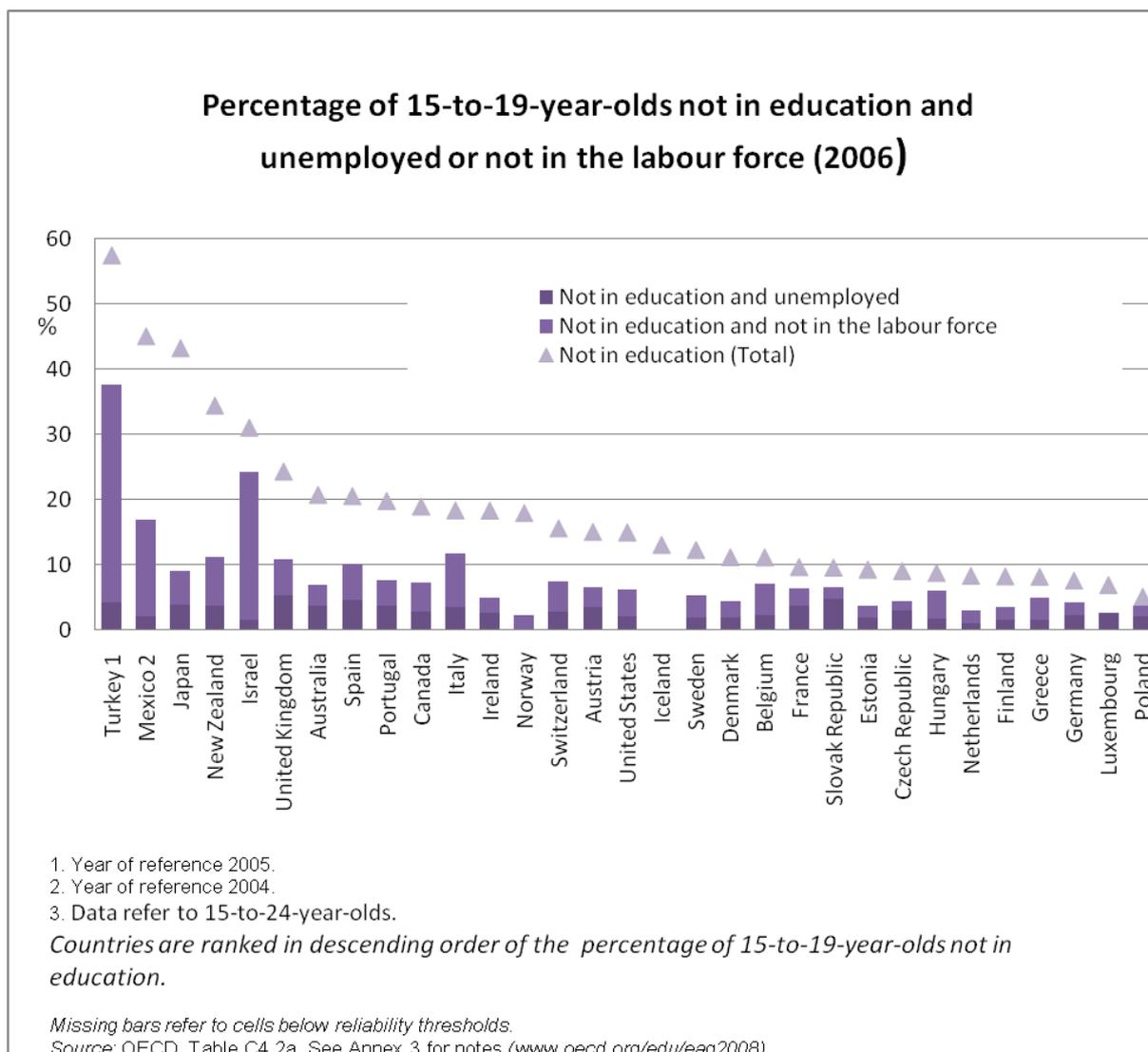
An expanding and technologically changing economy which has recently been viewed as losing competitiveness, a growing population and elevated youth unemployment rates together put considerable pressure on the Mexican VET system: to deliver more skills to larger segments of the population, in the sectors tied to structural changes in the economy.

The Mexican economy is currently ranked the fourteenth largest worldwide. However, according to the competitiveness rankings of the World Economic Forum, the Mexican economy recently fell eight levels to the sixtieth position (WEF 2008). This drop has raised concern and awareness among stakeholders of the need to introduce changes in education in general, and in VET in particular, as national education and training systems were identified as one of the main weaknesses causing this drop (WEF 2008). This is particularly important in a context of technological change, where the economic structure needs to shift from traditional activities based on abundant unskilful labour at low cost towards higher added value activities, (OECD 2002) requiring a more skilful labour force in order to become internationally competitive.

In addition, Mexican VET will also face the challenge of providing the necessary labour market skills for a growing population. According to the United Nations (2001), the population of Mexico will pass from near 100 million in the year 2000, to almost 150 million in 2050. This steadily growing population will require education and training and VET will have to play a crucial role in order to provide this growing population with the necessary skills to access the labour market.

Overall, the Mexican educational system presents a mixed picture. Attainment rates in Mexican tertiary education have been expanding, currently at 19% among 25-34 year olds and are projected to continue in that vein. (OECD, EAG, 2008). However, only 39% of 25-34 year olds have completed a qualification at the upper secondary level, which, despite recent improvements, is the second lowest level among OECD countries (OECD, EAG 2008)

The education and labour market situation of 15-19 year olds is troublesome as 45.1% are not in education. Only 62% of this group is employed, with the other 38% either unemployed or not engaged in employment, education or training (NEET), ranked at the lowest end of the OECD countries, second only to Turkey (OECD, EAG 2008)



The employment rate of the working age population is 61.1% --with official unemployment rates at 3.4% in 2007 (OECD Economic Outlook 2008). By contrast, youth aged 15-24, who made up 29% of the population in 2006, are employed at a rate of 44.8% (OECD Economic Outlook 2008). The youth unemployment rate of 6.2% is relatively high when compared to the adult unemployment rate. Furthermore, Mexico has high levels of youth NEETs at 21.8% in 2005, of which 91.3% fall into the category of low-skilled (OECD Employment Outlook, 2008). It is against this backdrop that we can see the important potential of the Mexican Vocational Education and Training system, given VET's traditional role in providing alternate pathways to youth not engaged in traditional schooling and in providing second chances to high school dropouts.

However, as in many other OECD countries, Mexico has experienced an ongoing struggle to position VET. Traditionally, VET has not enjoyed a high status in Mexico neither among enterprises, which did not consider VET as a source of the necessary skills demanded by industry, nor students, who preferred academic-based qualifications i.e. tertiary education, often seen as more prestigious. The percentage of upper secondary students in Mexico in 2006 who engage in VET hovers around approximately 31%. There are 3.8 million students enrolled in upper secondary education, of which just 1.5 million enrolled in public

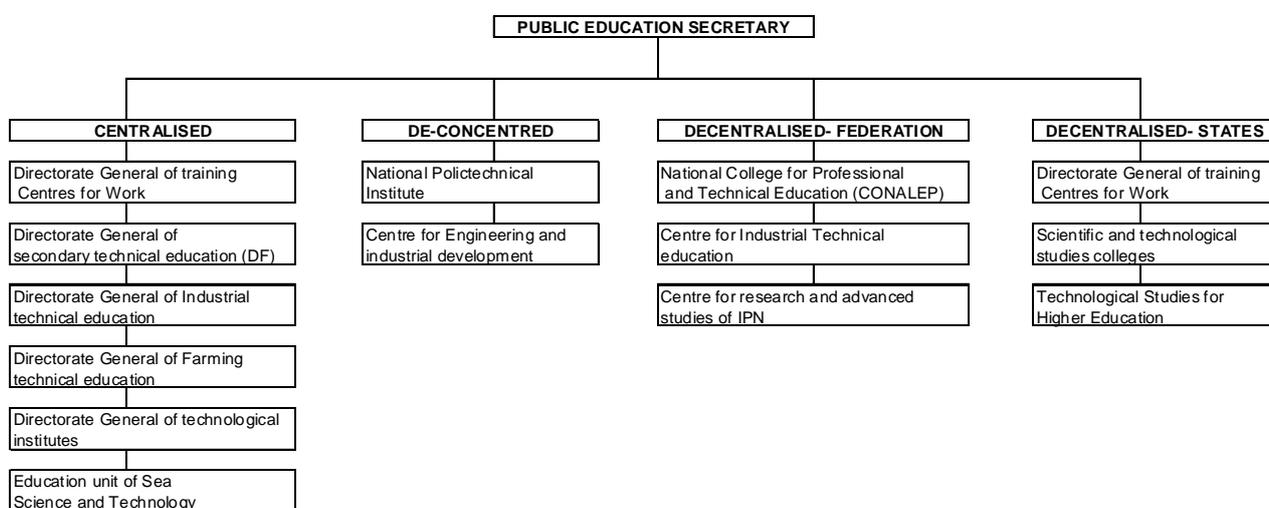
vocational education and training programmes (SEMS 2008). Furthermore, VET programmes are generally seen as a dead-end track, without a potential exit to other types of education. Recent efforts, such as the reform of the Technological Baccalaureate which will be examined in detail as the first case study, have been made to begin to mitigate the effects of these permeability issues in the Mexican education system.

Some of the weaknesses in the Mexican VET system may also be attributed to the relatively low rate of annual expenditure per student in VET programmes, which for upper secondary vocational education was equivalent to 3659 USD in 2005 after adjustment for purchasing power parity, as compared to the OECD average of 8969 USD per student (OECD EAG 2008).

The formal structuring of the VET system in Mexico is relatively recent. In 1976, the creation of the National System of Technological Education concentrated all the professional education and training activities within the System. In terms of the governance of the VET system, until the early 1990s it remained mainly the responsibility of the Federal government. However, during that period, a process of decentralisation started to take place with the States playing a more active role. Many new VET centres, belonging to the different sub-systems, were created under the responsibility of the Secretaries of Education of the States. This has resulted in a complex governance structure where both the Federal and the States governments are responsible for VET.

The VET system in Mexico is composed of a complex institutional framework involving many governmental institutions, both at the Federal and State level, and with different levels of autonomy.

**Figure 1: National System of Vocational Education and Training**



Source: Mertens, L (2007)

Figure 1 depicts the four groups of institutions providing VET training:

1. Centralised institutions: These centres are directly dependent from the Federal Government and report directly to the Undersecretary of Middle Education. It encompasses a wide range of institutions providing different types of vocational education and training; from short training programmes for direct inclusion into the labour market in the Directorate General of Training Centres for Work, to technical baccalaureates with different specializations in industry, farming or marine science.

2. De-centred institutions: These institutions are not formally legal entities and report to the Secretary of Public Education. They have specific powers to decide on all aspects related to their own management and are autonomous. This group of institutions is composed of The National Polytechnical Institute and the Centre for Engineering and Industrial Development
3. Decentralised institutions dependent on the Federal government: These centres are legal entities with their own budgets and assets and count on a high level of independence in order to set their curriculum and organise their activities. The CONALEP, and the Centres for Industrial Technical Education and for Research and advanced studies of IPN belong to this group
4. Decentralised institutions dependent on the State governments: These centres are dependent on the State governments, and as in the case of the centralised institutions, they provide a wide range of educational and training programmes, including initial and continuous VET.

In general, both federal and state institutions provide similar education and training programmes and the main difference between these institutions lies on the governmental institution to which they are accountable. Traditionally, VET was exclusively conducted in Federal institutions that were responsible for all aspects of education: from curriculum design to the selection of teachers and instructors. In the late 1980s and especially during the 1990s, following the overarching trends of opening the Mexican economy and fostering privatisation and deregulation processes, a process of decentralisation in VET was initiated. This process put an end to the creation of any new VET centres dependent on the Federal government, and instead, any new institution would, from then on, be created under the responsibility, financing and governance of the individual States. At present, both the Federal and the States' governments are responsible for VET, with no clear distinction of responsibilities. Both institutions are responsible for VET within their jurisdictions.

As a result, the governance of VET is complex with multiple stakeholders responsible for different parts of the system.

### ***The policy climate for systemic innovation in the Mexican VET system***

There is consensus among Mexican stakeholders on the need to introduce systemic changes in the VET system in order to make it more responsive to the challenges that the Mexican economy and society will face in the near and medium term future. The need for VET to (1) expand its coverage to be more inclusive, (2) improve its quality, (3) become more integrated and end the current fragmentation of the system, and (4) relevant for the private sector are strategic objectives that are guiding the process of systemic change.

Systemic change is not new to the Mexican VET system. In 1995, the World Bank funded the "Technical Education and Training Modernisation Project"<sup>2</sup> aimed at introducing innovative models in VET. The PMETyC was the result of an agreement between the Education and Labour Ministries whose main overall goal was to improve the technical training in Mexico in order to become more flexible and responsive to the skill needs of the national industry. The PMETyC had four main objectives: (1) to create standardisation and certification systems, (2) to transform the system into competence based training, (3) to raise training demand and certification and (4) to create a system of information, studies, evaluation and administration. In this framework, the Occupational Competency Standardisation and Certification Council ("Consejo de Normalización y Certificación de Competencias Laboral" - CONOCER) was created. Its main objective was to improve the quality of companies, workers and training institutions by defining standards to be used in the promotion and generation of labour competency qualifications and certifying

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<sup>2</sup> « Proyecto para la Modernización de la Educación Técnica y Capacitación, PMETyC»

these qualifications based on the real requirements of companies. CONOCER however, has only partially fulfilled these objectives thus far, as the institution has become more of a certification office with no role on the definition of competences for a vast number of occupations, and the PMETyC is perceived by the stakeholders as having fulfilled only partially its expectations.

Since the arrival of the new government in 2007, further systemic changes have been adopted for the VET system to address some of the deficiencies that emerged following the 1995 Reform Project. More precisely, CONOCER is currently undergoing a structural change which is affecting its mission and activities. The institution is moving from basically being an operational provider of certifications to situating certifications within an overall national competitiveness agenda. The strategy of CONOCER is to redesign the process in which skill standards are defined. This redefinition of standards would count on the direct involvement of industry leaders organised in industry committees, instead of human resource managers as previously done. The intention is for the certifications issued by the Federal government to provide real value to individual users, through social recognition, as well as economic justification to industry. It remains to be seen if this restructuring of CONOCER, with a new director and strategic programme, will suffice to recapture the credibility among industry leaders.

Moreover, the new federal government has been actively involved in enhancing structured and periodic communications with the Secretaries of Education of the States through the National Council of Education Authorities (“Consejo Nacional de Autoridades Educativas”- CONAEDU). The complexity of the governance structure with no clear division of responsibilities between the Federal and State governments could pose a challenge to the introduction of system-wide innovations, and therefore this fluid communication among government institutions is crucial to reach any agreements. This effort has already yielded significant results, as recently a Reform of all the upper Secondary Education sub-systems, including secondary technical education, was achieved.

This favourable environment for innovation in VET is equally supported by the reform of the Technical Baccalaureate introduced in 2004 that aimed at increasing the flexibility and openness of the system to the labour market and across sub-systems; as well as a new dialogue between the technical training system and the private sector to align the training supply to the industry needs.

Despite encouraging development, there remain challenges to innovation in the VET system, in addition to the aforementioned complexity of the governance structure. As mentioned in the section on context, VET receives comparatively little expenditure in Mexico, which contributes to a number of challenges including variations in quality of provision. As in many other countries, VET has not traditionally enjoyed a high status amongst students and employers alike. The links between employers and the VET system have been somewhat weak, although efforts have been made to address this at the local level and will be discussed in the Case Study on the Mayan Riviera. There are also often gaps in the availability as well as use of evidence by stakeholders and policymakers, which will be discussed further in this report.

The next section will present in more detail three systemic innovations that have been recently undertaken and that have initiated an ongoing process of change in substantial parts of the VET system: (1) The Reform of the Technical Baccalaureate; (2) the Upper Secondary Education Integral Reform; and (3) A closer alignment of vocational training to industry needs in the Mayan Riviera.

## THE CASE STUDIES

This section presents the background information as well as the assessment of the conditions regarding systemic innovation in three case studies that were put forward by the Secretary of Public Education. The structure of each of the case study report is the same: we first present some background information to describe the case to an external reader. Second, we highlight the importance of each innovation in the broader Mexican VET context. Third, the report addresses the main research questions analysing the specific process used to decide, design, implement, evaluate and scale-up, if applicable, the innovation, and places a special emphasis on two key dimensions throughout the different phases of the process: the use of knowledge to inform the process, and the involvement of stakeholders. Finally, the case studies depict lessons learned particularly in the domain of the process of innovation in VET and its systemic implications.

### Case Study 1: Technical Baccalaureate Reform

#### *Background*

This case study covers the 2004 reform of the Mexican Technical Baccalaureate (Bachillerato Tecnológico, hereafter BTe). This reform amounted to substantial changes in vocational education and training (VET), and gave way to larger reforms in upper secondary education in Mexico in 2007 that encompassed the whole of general secondary education—a reform that is referenced but not comprehensively covered in this first case study. The 2004 reform can be considered an innovation within the Mexican context insofar as a wide range of elements inexistent thus far in the Mexican secondary VET system were introduced—see section below for further details on these elements.

The BTe, which students typically start at age 15 after completion of lower secondary education, is one of the strands through which upper secondary education is delivered in Mexico, and currently can provide access to all types of higher education –although this transition, and depending on the particular subject and university of destination can be more difficult than for general upper secondary education graduates from some strands such as the ‘Bachillerato General’- as well as to the labour market. Over 75% of BTe graduates continue to a higher level of education (OECD 2008<sup>3</sup>). It is organised in 6 semesters (studied over 3 years) and from the second semester until the end of the programme, it provides technical education and training modules in a wide range of fields, depending on the speciality of the programme. In the academic year 2003-2004, it enrolled over 675,000 students taught by around 35,000 teachers in over 650 schools around the country (Tamez-Guerra et al. 2004). BTe student enrolment makes up for just over a quarter of the enrolments in public upper secondary education (SEP 2008:18<sup>4</sup>). Students can obtain the full BTe certificate if they pass all required subjects, or a credential for the sub-components of the programme they have completed. Most of these students (almost three quarters) continue their studies in a higher education institution.

The BTe reform subject of this case study was implemented from August 2004 and the first graduates from the new BTe completed their studies in 2007. The BTe certificate is equal in all the Federal schools coordinated by the General Directorates (DG) of:

- Science and Marine Education (Ciencia y Tecnología del Mar -DGECyTM);
- Agriculture/ Farming Education (Educación Tecnológica Agropecuaria -DGETA);

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<sup>3</sup> OECD (2008) *Learning for jobs: the OECD policy review of vocational education and training in Mexico. Mexico Questionnaire*. OECD, Paris.

<sup>4</sup> SEP (2008) *Reforma integral de la educación media superior en México. SEP, México*.

- Industrial/ Technological Education (Educación y Tecnología Industrial -DGETI).

Although these certificates are equivalent, there can be variations in the vocational training component in different types of institutions, depending on the productive profile institutions aim to provide to their graduates.

The reform responded to a series of needs:

- Educational system needs: First, there was much diversity and disconnection in the previous organisation of the BTe, which made it difficult to manage the system and also accentuated difficulties in student transfers between different types of BTe and locations. Second, there was a lack of efficiency in the design of the programmes of study, derived from a lack of integration within their curricular components and excessive length.
- Economic needs: First, a lack of relevance of the BTe programmes in relation to labour market needs and an associated low appreciation by employers (which was translated into low returns for graduates). Second, the focus of the programmes on inputs, rather than learning outcomes, made it difficult for graduates to move across occupations within the labour market.
- Social needs: A widespread perception in Mexico of VET as a “second class education” (with low recruitment into the system) and uncertain prospects of drop-outs in the labour market were identified as requiring policy action.

These needs, taken together, highlighted the requirements for greater transparency on what upper secondary vocational education means for a common profile for graduates, opening up pathways into tertiary education and the provision of competences that are crucial in order to achieve higher level competences (e.g. learning to learn, basic skills). The added value of the reform would be that these competences could be acquired through a technical route, thus catering to the proportion of the population not engaged in general education. The ‘Secretaría de Educación Pública’ (SEP) argued that the reform should also go beyond providing only very specific training and should incorporate the teaching of key skills and competences to enable graduates to change sectors within the labour force and lifelong learning.

### ***Importance in the context of national VET policies***

The reform had far-reaching implications within the Mexican VET system. The main elements it put in place to meet the needs specified above were the following:

- *Change of orientation and system aims:* From a focus on learning inputs to a focus on learning outcomes.
- *Change in pedagogic methods:* From education-centred to student-centred methods and a transformation of teachers’ role from someone who transmits knowledge to pupils to someone who facilitates learning. Part of this change will be based on greater reliance on problem-solving exercises, simulations, team-work and case studies (see also Tamez-Guerra et al. 2004).

- *Change in curriculum structures*: based around three components (basic, propedéutica – or general- and professional) with an exit qualification at the end of each cycle that is useful and relevant in the labour market<sup>5</sup>.
- *Introduction of new evaluation methods*: With enhanced monitoring and formative evaluation methods for schools.

The desire to increase the flexibility and openness within the system and in relation to the labour market, as well as the inputs provided by the productive system to education, were basic aims of the reform under the imperative of moving from supply to demand driven programmes. The key elements of the innovation outlined above were identified following the process and sources described in the next section. On the whole, the case study shows a top-down approach at the time of design and implementation of the innovation, with the establishment of channels for communication with stakeholders but little involvement in terms of consultation and joint-decision making. There was also insufficient transmission of knowledge on the reform and capacity building in relation to teachers. This not only resulted in lack of capacity in early stages of the reform but also accentuated resistances during these stages. The reform process adopted, in return, accelerated in the view of government the process of implementation of a necessary reform –e.g. a reform in areas where government was confident on the need for change and the direction to take. The case study also shows how, as teachers became more familiar with the reform, however, they also became more accepting. Currently, some structural aspects of the innovation (e.g. curriculum changes) are in place whereas work is ongoing in other aspects (such as capacity building for teachers by means of teacher training and the introduction of stronger evaluation methods).

### ***The process of initiating/designing the innovation***

As already mentioned, the decision to initiate a process of reform was taken by the Federal government, which felt the necessity to reform the BTe to increase the permeability of the students across the different sub-systems and between secondary and tertiary education, and to make it more reactive to the industry needs. This decision was communicated to the main stakeholders, but they had a limited involvement in terms of decision-making. Teachers and enterprises played a more important role in the design of the innovation, as the Secretary of Education, via the COSNET (Council of the National System of Technical Education) –later denominated COSDAC-, consulted them to design the new curriculum.

### ***Use of the knowledge base***

The question of how to ensure an adequate and sufficient flow of information during the process of policy reform and innovation is extremely challenging. There are questions concerning who is considered qualified and reliable enough to provide the information, and the types of information which are considered useful and relevant to decision makers. The role of different knowledge sources (e.g., formal/academic, semi-formal, popular/media knowledge, general tacit knowledge) in identifying and developing innovation policy is an essential component to the understanding of the processes underlying systemic innovation. This subsection reviews the use of knowledge made in the 2004 reform of the Mexican BTe in the process of initiating/ designing the innovation.

Review of international experiences, use of existing research and statistics and consultations with experts and target groups were the main methods utilised to gather knowledge for the design of this reform. Knowledge was largely gathered through the work of SEP officials, although there is currently no VET

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<sup>5</sup> For a more detailed description see DGECyTEM, DGETA and DGETI “Estructura del Bachillerato Tecnológico”. Working Document. Undated document.  
<http://www.dgeti.sep.gob.mx/AreasDeptos/ReformaCurricular/estructuradebachillerato.pdf> checked on 03-12-2008.

research unit per se in the SEP. The unit that is closer to such a function, the Academic Development Sectoral Coordination unit- COSDAC (and before 2007 its predecessor COSNET), has expertise in curriculum design, but does not have great experience in tracking industry workforce demands. Although the evidence base was somewhat limited (lacking, for instance, consultations with parents, students and other key stakeholders; systematic evaluations of the previous system, etc.), on the whole, the magnitude of the problems in the BTe was seen to reduce the extent of need for further knowledge gathering, as explained in more detail below.

The Mexican system had previous unsatisfactory experiences in the use of international comparisons and borrowing to design policy initiatives in VET - notably through the only partially PMETyC World Bank Project mentioned above in this report, which relied too heavily on the experience in the UK system without fully taking into account contextual differences. The 2004 reform was informed by international experiences, from both Latin America and Europe (in particular France), and the results of international benchmarking, based on data from international initiatives such as PISA and administrative data collected by international organisations, on topics such as number of hours per BTe year –information on this topic fed into the design of the new BTe curriculum structures. In this case they were borrowed more successfully than in past occasions by ensuring that these experiences were taken into account but not accepted uncritically for transposition to the Mexican context. A process of policy learning in relation to the use of international experiences could therefore be identified in this respect. As such, international curricula and norms in relation to different professions were surveyed by the SEP and academics from institutions such as UNAM (Universidad Nacional Autónoma de México) and UPN (Universidad Pedagógica Nacional) at the time of designing the new curricular structure for the BTe and the new points of entry into the labour market that it should provide –which was achieved through the design of intermediate qualifications for those students who drop out before completion of the programme.

International comparisons and experiences were complemented with other sources of knowledge. The INEGI (Instituto Nacional de Estadística y Geografía) provided information on the productive dynamics of Mexico, which was also taken into account. Academics and researchers fed into the decision-making process to help in the process of translating industry needs into the curricula. Reference studies for the reform came in fact from the “Asociación Nacional de Universidades e Instituciones de Educación Superior” and the “Red Nacional de Educación Media Superior”, where many of the Mexican experts on upper secondary education work. The curriculum design work needed to translate the national guidelines prepared by the government and academic consultants into study programmes, a task which was undertaken with support from BTe teachers-, started only six months before the implementation of the reform. Specific expertise was also sought from practitioners and teaching staff in relation to the infrastructure needed to implement the reform. The CAPCEE (Committees for the Construction of Educational Spaces), known from 2008 as INIFE (Instituto Nacional de Infraestructura y Equipamiento), consulted with experts (including teachers, industry professionals and professional organisations such as the Consejo de Coordinación Empresarial and CONCAMIN) to prepare national guidelines that determined the minimum necessary infrastructure for teaching different BTe courses. An important issue is how this knowledge was filtered to those implementing the initiative (i.e. teaching staff and their managers in schools), a topic that we readdress below in the section on implementation.

The extent to which the knowledge gathered guided some of the decisions and the initiative design (vis-à-vis axiomatic decisions) remained an open question, as the incentives to look for evidence in the 2004 reform were relatively low, given the perceived widespread view (in government and amongst industry initially) that a reform was needed and changes could only be an improvement over the status quo. As an example, whereas the reform put an emphasis on enabling transfer between different BTe providers, the actual volume of use of transfer is unknown (i.e. no evidence supported the need for enabling such transfers) and practical barriers (largely related to curriculum design and remaining differences in the vocational components of courses in the different strands of the BTe), although diminishing through time,

still make that transfer difficult, in spite of the pathways theoretically opened. Similarly, overall, the reform gave a much more academic profile to the BTe, which was inadequate for some of the students that used this system –a fact that has recently been recognised and has changed as of 2007, making the most academic elements available in the BTe a voluntary component of the curriculum rather than an integral part of the qualification as they were in 2004.

It is also important to highlight that whilst knowledge, research in particular, was gathered from different sources during the reform process and it is claimed to be gaining increasing importance in policy-making, government officials and researchers alike reported that historical legacies still explain a good part of the shape of the upper secondary VET system in Mexico. One example of this can be provided in relation to the diversity of delivery institutions providing training for the same qualification, without a clear rationale and at a cost of reduced transparency for users.

### ***Implementation***

The BTe reform faced greater problems at the time of implementation than during its design phase. Whereas the design phase was reported as unproblematic by most of the stakeholders interviewed (government officials, consultants and academic experts) the implementation phase was described as more challenging. As we will see, however, several of the challenges in implementation could be referred to faults and shortcomings in the process of the design of the reform.

The process of implementation of the reform was top-down, under strong leadership from the SEP, with a differential degree of involvement of other stakeholders, as detailed below, at various stages of the implementation process. The SEP was the lead stakeholder in the stages of problem definition and analysis –with strong political support within the Secretary- although previously other stakeholders, such as employer associations, had pushed to put the reform of BTe in the agenda. During the strategic design stage (when the main elements of the reform were initially discussed), employer associations provided inputs but it was not until the operational design stage (when the detailed shape of the reform was to be discussed) that they were joined by academic experts and selected practitioners, as already outlined above. The governance of the BTe structure facilitated to some extent the top-down implementation of the reform, as it is relatively simple and centralised, compared to other strands of secondary education in Mexico –in which there are greater numbers of stakeholders, such as the Mexican States, involved in the planning and delivery.

During the implementation phase a greater range of stakeholders, inevitably, took part in the reform. Teachers' trade unions discussed the implications of the reform for the working conditions of the affiliates, higher education institutions were to be in charge of the training of teachers for them to be able to implement the novelties associated with the reform (although eventually, this training was in practice limited). Furthermore, individual employers gave their views on the reform and some new partnerships with schools were incepted as well as, eventually, individual schools and teachers. Public sector organisations and individual schools were also in charge of the monitoring and evaluation of the reform – see below for greater details.

Teachers' trade unions in particular are very strong in Mexico given their high level of affiliation, but played a very small role in the design of the reform. Thus it is hardly surprising that trade union representatives argued against the reform, even if they were in favour of its content as it enhanced the relationship of graduates with the labour market –a long standing demand from unions. However the process through which the reform was implemented was very centralised and insufficient efforts were put into teachers' understanding of its objectives and design, for them to support the reform. Greater efforts in this respect, in turn, would have faced teachers' resistance and would have slowed down the reform particularly in its early stages. According to unions, the “cascade” model for transmission of information to

teachers, from the centre (SEP) to senior civil servants and from them to school principals who would ultimately inform teachers did not work optimally and gave rise to multiple misinterpretations, whereas trade unions could have played a role in the direct transmission of information about the reform from the SEP to teaching staff. Similarly, trade unions participated in the process only tangentially as they had exchanges with the SEP, but these were not in-depth and unions would have desired greater joint work on the objectives, goals, procedures and strategies of the reform with the SEP.

Overall, the model for the implementation applied by the SEP exhibited some involvement of stakeholders through communication. Consultation or joint- decision-making (to improve the design of the initiative, provide reality checks “from the ground” and reduce resistance at the initial stages of implementation) was scarce. Communication was nevertheless not always applied or well planned and this can be best seen in relation to the situation of teachers and heads of school receiving details of the reform elements only days before the start of the academic year. Unsurprisingly, teachers and teacher unions initially opposed a reform in which they had participated to a very limited extent in the design phase, although according to government officials and principals interviewed later on in the process –they later saw the benefits it produced for students and came to support it. Teachers also reported a lack of guidance in relation to some of the new subjects created as under the reform, in particular during its initial stages, but still to some extent further along in the process. Teachers struggled with the implementation of the reform, both in terms of pedagogy and required technical competences. Even today, the reform is facing capacity bottlenecks as teachers do not have the necessary skills to implement the changes envisaged by government to create a new profile for secondary education graduates, something that is currently being addressed through the implementation of a large scale teachers’ programme in the context of the 2007 reform of upper secondary education. The up-skilling process in terms of pedagogic methods will also be aided to some extent by demographic trends, as a significant proportion of Mexican teachers are due to retire within the next 5 to 10 years. Training at universities, however, does not seem able to provide a satisfactory answer to the second point –the need for greater technical competences amongst teaching staff. In that respect, benefits could be obtained through the enhancement of existing linkages between teachers and industry through, for instance, placements and exchanges or increasing the value of professional experience in teacher recruitment.

In terms of diffusion within educational institutions, structures were put in place for the exchange of information and support between schools at the time of implementation through the establishment of “Multiplying Centres”, a set of five regional networks of “reference schools”, selected because of their good performance. They could provide support to other institutions to overcome the challenges they faced at the time of implementation. In practice, however, the use of such structures seems to have been rather limited, due to the low number of Multiplying Centres, which made face to face consultations difficult. Thus, the system of implementation lacked effective institutionalised mechanisms for the sharing of good practice and mutual learning to address significant differences in the results being achieved by schools. In fact, some interviewees argued that school principals are still unclear today about the decisions that they can make and not make (for instance in terms of their relationship with local employer, charges they can implement for training, etc.) and do not know how far their decisions can go in these respects. This lack of clarity has had far-reaching implications as one possible model for Mexico would be for schools to be more responsive to economic needs by working in a decentralised way, responding to local needs by reaching individual agreements with local employers within a clear framework provided by the Federal level –which would ensure, for instance, financial incentives for those linkages and joint work (e.g. with schools able to keep revenues from employers with whom they link). As a result, so far individual employers have tended to be removed from contact with vocational education and training institutions in the country. Although they can be part of School Boards, employers’ contributions to such platforms is uneven as competitive pressures make it difficult for businesses to always devote the time that is needed for providing the inputs required by schools and they cannot always be sure about what they can expect from individual schools as an exchange for their commitment.

In spite of the significant achievements of the reform, it should be noted that a greater role in its design and implementation for certain key groups may have yielded further benefits during implementation. In particular, greater involvement of parent and student associations could have contributed to designing the reform so as to better address the above-mentioned and pressing parity of esteem issues between general and vocational secondary education. Indeed, a culture of parental participation in school issues is lacking in Mexico and parents' associations are weak in comparison, for instance, to most European countries. Yet the absence of involvement of parents and student representatives in the design stage made the reform run the risk of not fully understanding the reasons for low parity of esteem; hearing the voices of parents and students in this respect can be critical. Greater involvement of teachers' unions during the design phase would have also helped to overcome lack of knowledge (first) and resistance (later) on the ground (as one interviewee from government put it "educators oppose change only when they do not see it as necessary") and the engagement of other parts of the public sector would have also been of benefit since they are large employers, but these were not consulted. Whilst the described process increased the risk of failure, SEP's approach was to try to push decidedly for the reform to be implemented, if not without resistances, and succeeded in that goal. So far greater progress has been achieved in terms of changing curriculum structures and less in terms of changes in pedagogy and the movement towards learner-centred approaches (as these naturally require more time) and stronger monitoring and evaluation. This is reinforced to some extent by an unmet need for greater investment in infrastructure and equipment to deliver the new curricula.

The reform was ambitious and with short time-scales for key phases of the implementation (although comprehensive road-maps for implementation were never available), which has not only been testing for teachers and students, but also for the SEP itself. Indeed, the complexity and scale of the reform has put under strain the capacity for implementation and the coordination capacity of the SEP. There is also some evidence of some stretching of SEP officials during the reform, as they lacked comprehensive knowledge about local realities across the country, which led to delays in the implementation of the reform in some regions/schools. Some of the SEP systems, equally, seem to not have been fully prepared for a smooth implementation of certain aspects of the reform and the organisation has also faced human resource constraints. Overall, however, much was achieved in terms of implementation in a relatively short time.

The process of implementation of the innovations put forward in 2004 (such as the changes towards student-centred learning and learning outcomes) is ongoing and now linked to the 2007 reform which tries to provide more impetus for change as there are concerns about the pace of change in BTe's classrooms after the 2004 reform. Thus, an interesting aspect of the reform is that it worked as an un-planned pilot for a subsequent reform ("Reforma integral del Bachillerato" 2007) of the whole of upper secondary education in Mexico, which scaled-up several of the core aspects of the 2004 reform and aims to produce greater integration within the secondary education system. The BTe reform made other components of the system aware of the need for change in aspects such as the focus on learning outcomes. Some aspects already outlined but not truly addressed in practice with the 2004, such as teachers' training –which is a necessary precondition for the movement towards constructivist approaches within the Mexican context- have also been the subject of the 2007 reform and received significant additional funding allocations. In terms of process, decision-making also changed significantly. Whereas in the 2004 reform the bases for interaction between stakeholders were documents produced by the Federation, in 2007 there was an earlier call to specialists and –necessary given the competences of the States in some of the strands of upper secondary education now under reform- all the sub-systems.

### ***Monitoring and evaluation***

Overall there is consensus amongst the stakeholders consulted that the reform had led to substantial improvements in for Mexican vocational upper secondary education, for instance by facilitating learning through the use of new curriculum structures and a focus on learning outcomes, and by opening up new

intermediary pathways into employment. Yet, limited formal monitoring and evaluation elements have been put in place. Within existing activity there have so far been greater developments in relation to monitoring –through the collection of data on a set of standardised indicators- than in the evaluation of the reform. This was not subject to an ex-ante evaluation or impact assessment, and no formal comprehensive interim evaluations were planned or undertaken. A partial and ‘exploratory’ interim evaluation of the reform (‘Diagnóstico sobre la operación de los programas’) based on surveys of teachers who had taught a range of the subjects of the first and second semester of the ‘basic education’ component of the curriculum established by the reform (including ten subjects such as ‘Algebra’, ‘Science, technology, society and values’, ‘English’ and ‘Chemistry’) as well as Biology –taught during the third semester- was undertaken in 2005<sup>6</sup>. The surveys revealed some content in relation to the curricular reforms but, for many subjects, also the need for progress in reducing the number of students per class, investment in infrastructure and teacher training.

At this point it is unclear how the monitoring initiatives in place will provide the information required for a comprehensive interim or final evaluation as a framework for this has not been developed. The reform has suffered significant gaps in terms of monitoring (e.g. of numbers of people moving across different types of BTe and student profile data amongst others) and lack of centrally defined targets for schools. Some of the data gaps for the assessment of the results of the reform will be filled through recent/current data collection exercises, notably the ENTELEMS (a survey on labour integration covering people from different educational backgrounds through time which is scheduled to provide data from 2008).

An aspect for reflection is the lack of formal piloting of this large and complex reform. Although piloting would have increased the time-scale for implementation, piloting could also have warned about some of the design faults of the initiative and helped to avoid some of the challenges faced later on. As mentioned, the reform served as an unintentional pilot for the 2007 reform.

The current Mexican administration is aware of the limitations of the reform and the work ahead. Thus, although much change has been achieved, it does not consider the BTe reform to have been a success yet. This attitude will, hopefully, enable a continuous fine-tuning of the system.

### ***Lessons learnt***

The case study of the Mexican reform of the BTe in 2004 reveals several policy lessons, a number of which have been taken into consideration during subsequent reforms of secondary education in that country. Consistent with the focus of our research, we concentrate on those lessons that can be extracted on the use of knowledge and the involvement of stakeholders.

In relation to the use of knowledge, considerations can be made regarding the knowledge used by the SEP to design the initiative, the knowledge available to schools to implement the reform and the knowledge of the system of its actual users. With regards to the first, it is noteworthy that the SEP and the central government made greater and more careful use of knowledge than in other recent initiatives – including the use of international benchmarking, statistics, linking with epistemic communities. Yet *more emphasis should have been given during the design of the reform to develop, within the SEP, the necessary know-how in relation to the implementation of reform*, to avoid delays in different geographical areas and schools as well as the failure of some systems. Practical knowledge could have been strengthened through the use of pilots. Piloting/ pilot evaluation for such a complex and wide-ranging initiative may indeed have pre-empted some of the challenges faced during implementation. The Mexican system of secondary

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<sup>6</sup>See

<http://www.dgeti.sep.gob.mx/site/lanzador.phtml?idcont=121&PHPSESSID=83ff450be6%20be7548f77af62d308b5688> checked on 26-01-09.

vocational education, moreover, provides examples of *institutional inertia that suggest that the use of knowledge should move still further to the centre in decision-making*. With regards to the second point, the case study highlighted the *importance of the gathering and use of knowledge not only at the time of design by central administration, but also at the time of implementation by frontline staff*. Indeed, the knowledge available to teachers and schools has been clearly insufficient, and this has been one of the central shortcomings of the reform. Teachers were not engaged in the shaping of the reform and most of them are yet to receive the training they need to implement the reform's expected changes in the classroom. Similarly, schools have lacked guidance and effective means for support in the implementation of change as the schools' networks created for the dissemination of good practice were reported to have been insufficiently used. Finally, users also need to improve their knowledge of the newly reformed system and work their way through the complex existing educational and qualification structures in Mexico. In that respect, *the establishment of knowledge management tools such as National Qualifications Frameworks and the enhancement of information, advice and guidance systems could be of help*.

Building the knowledge base from recent and current experience will also be critical to the future success of the BTe. *Monitoring and evaluation exercises should be strengthened* within this context, and capacity built within schools to feed monitoring systems appropriately. Indeed, there is some evidence of a certain lack of understanding of reporting mechanisms by educational institutions and students. Further support should be made available and the details of monitoring systems more thoroughly tested before implementation to enhance the validity and reliability of the data collected.

In relation to stakeholder involvement, the reform was *neatly top-down and short time-scales for implementation* and structural shortcomings (such as the weakness of parental associations) precluded communication with the full range of relevant stakeholders –a thorny challenge for most reform processes. Overall, stakeholders were involved by providing them with information about the reform than through consultation or joint-decision making. *Greater consideration could have been given to the involvement of a fuller range of relevant stakeholders to gather further knowledge and achieve greater support with view to the implementation of the initiative*. That is the case, in particular, of teachers', students' and parents' representatives. This would have been likely to reduce faults in design and would have enhanced ownership and the understanding of the reform amongst those groups facilitating the reform implementation process, at the expense of additional time before the implementation of the initiative.

During the implementation phase, there was scope for greater efforts in stimulating collaboration between schools, collaboration with employers and in the clarification of responsibilities and rights of schools for collaboration with industry. Collaboration between schools could have been of benefit both at the time of exchange of good practices –see above- and in terms of collaboration in delivery (e.g. through sharing of equipment and infrastructure or greater specialisation by subject to concentrate resources). Collaboration with employers at the local level is of great importance given the concerns in the reform with the employability of those BTe graduates who do not choose to undergo higher education studies. Although employers are represented in Boards of School, further work with them should be stimulated. A first step in this respect would be to clarify the competences of schools for engaging in joint work with employers.

## **Case Study 2: Upper Secondary Education Integral Reform**

### ***Background: Objectives and main elements of the reform***

This case study covers the 'Reforma Integral de la Educación Media Superior' (upper secondary education integral reform, hereafter RIEMS) that has been planned and implemented in Mexico since 2007. The case study makes use of available documentary information as well as a set of interviews with stakeholders, including representatives from the Federal (in particular the SEP but also the Ministry of

Labour and CONOCER—the National Council for the normalisation and certification of professional competences) and State Mexican administration, employer representatives, ANUIES (National Association of Universities and Institutes of Higher Education), the National Pedagogical University (UPN) and the principal and a selection of teachers, students and parents from a CETIS (vocational upper secondary school) located in Mexico city<sup>7</sup>. Whereas the case study is as such based on dialogue with a cross-section of relevant stakeholders, the direct views of some important stakeholders, which may have enhanced the presented analysis of the reform—in particular trade unions, teachers’ unions and students’ representatives—are missing.

In 2006 upper secondary education was the part of the Mexican education system where the majority of drop-outs occurred. At that point, enrolment went from around 80% of the age cohort in the first year to less than 50% in the third year of upper secondary education. These high drop-out rates are mainly linked to economic issues as students leave education to enter the workforce. In addition, the great labour market premium in Mexico is obtained through tertiary education (that provides salaries on average 100% greater than those for people with upper secondary education according to the National Mexican Census of 2000) rather than upper secondary education (which provides a salary premium of 35% over lower secondary education according to the same Census data)—a fact also stressed by employer representatives during the case study visit. This was perceived by Mexican administration as an indicator that upper secondary education does not provide sufficient incentives to those students who did not plan to continue to tertiary education. Taking this situation into account, the Mexican Government set a target to increase the quality, relevance and ‘coverage’ –defined in SEP (2008<sup>8</sup>) as the number of young people studying at the upper secondary level in relation to those within the official upper secondary education school age. The target is for coverage of upper secondary education to increase from 58% to 68% in the period 2007 to 2012, with almost 700,000 new students enrolled into the system, in order to reach almost 4.5 Million. A particular target for the VET strands of upper secondary education has not been fixed. There is currently a debate in Mexico about the extension of compulsory schooling up to the age of 18.

It is within this context that the RIEMS has been underway<sup>9</sup>. The reform seeks to change the education model of secondary education as well as the relationship between the Federal government, State governments, universities and the whole range of upper secondary schools that operate in the different sub-systems of upper secondary education available in Mexico (which, until this reform, had seldom established a dialogue).

The three main challenges to which the reform aims to respond are:

- ‘coverage’,
- ‘quality’ and
- ‘equity’ (in particular addressing differences by socio-economic background)

The overall aim of the reform is that upper secondary education better responds to the ‘needs of today’s world’, understood as enabling effective social, political and labour market participation, so that

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<sup>7</sup> For full details of interviewees see the list included in the Annexes accompanying this report

<sup>8</sup> SEP (2008) ‘Reforma Integral de la Educación Media Superior en Mexico: La creación de un Sistema Nacional de Bachillerato en un Marco de diversidad’. SEP, Mexico

<sup>9</sup> For a full description of the contents of this reform see SEP (2008) ‘Reforma Integral de la Educación Media Superior en Mexico: La creación de un Sistema Nacional de Bachillerato en un Marco de diversidad.’ SEP, Mexico.

individuals possess the critical thinking and problem solving abilities that are required to function in a knowledge-based plural society. It entailed three main elements: a) a movement towards greater integration of the different sub-systems of upper secondary education in the country within a context of greater transparency, namely through the establishment of a common curricular core for all upper secondary education, b) a movement towards competence-based learning (away from learning inputs and towards the prevalence of learning outcomes) and c) a change in paradigm towards a constructivist approach to teaching and learning. By contrast to the 2004 reform of the Technical Baccalaureate (BTe) also reviewed in this report, the RIEMS aims to cover all of upper secondary education, not only its vocational strands. Thus, the implementation of the reform needs to occur against the backdrop of the complex Mexican upper secondary education system, made up of a plethora of delivery institutions operating within 25 different sub-systems between which low permeability has existed thus far.

This reform was shaped and influenced by previous reforms of the:

- Technical Baccalaureate (BTe);
- CONALEP;
- General Baccalaureate;
- Secondary education delivered at UNAM; and
- Secondary education delivered at the Instituto Politécnico Nacional (National Polytechnic Institute).

These reforms established the relevance of emphasising basic skills and competences (as opposed to learning inputs and memorization), the definition of basic common elements to all programmes within a sub-system, curriculum flexibilization (through an emphasis on transversal knowledge), and learning-centred approaches to teaching (including increasing the importance of tutorials and dynamic elements in teaching). More specifically, the three main principles that articulated the RIEMS were related to the need of the new upper secondary education model to be:

- universal for all modalities and sub-systems of upper secondary education (which would start from a common core of knowledge, skills and attitudes for upper secondary school graduates, to be covered in a 'core curriculum' for all upper secondary education; this greater connection between all modalities of upper secondary education would be reflected in the issuing of a common certificate for all upper secondary);
- relevance and adequacy of the curriculum (based, as already mentioned, on competences and with a common core of knowledge); and
- portability (facilitating transit between schools and subsystems, by means of part-qualifications which are to be recognised in different schools and subsystems).

Further details on the elements of the reform are provided in the next section.

### ***Importance in the context of national VET policies***

The remit of the RIEMS goes beyond, but encompasses, vocational education. The RIEMS has been established through agreements between the Federal and State governments and will be implemented in both public and private schools. As already outlined it aims to (1) increase access, retention and relevance

of the vocational as well as the general strands of upper secondary education and (2) include both strands within a new upper secondary education with a common and stronger identity, order and structure. The establishment of the Common Curriculum Framework (or ‘Marco Curricular Común’, CCF) is instrumental in this respect, as the CCF requires the definition of a common profile for graduates of upper secondary education at the national level regardless of the subsystem from which they graduated and whether they followed a general or vocational programme. As long as this profile is respected, each upper secondary institution can further develop, complement and enrich the profile of its graduates, according to its educational model, the profile of its students and its relationship with the productive or educational sectors, leaving therefore room for different vocational schools to maintain their own particular profile. The CCF is, therefore, a minimum curriculum requirement upon which institutions can build new elements. Before the reform becomes fully implemented, vocational upper secondary schools, like other education and training institutions will need to contrast the competences outlined in the CCF and their previous study plans and programmes, relating each of the CCF competences to their educational offer. The reform thus aims to articulate rather than replace the previous programmes under the different subsystems. The underlying idea is that the same competence can be developed in different educational contexts.

The reform organised the competences to be acquired in upper secondary education into generic (key, transversal across disciplines and transferable as they enable a wide range of further learning), subject-specific or disciplinary (divided into basic and extended) and professional (also divided into basic and extended) competences. Generic and basic disciplinary competences are common to all strands of upper secondary education and form the ‘core’ of the CCF of upper secondary education in Mexico as reflected in the table below. This table reflects differences and commonalities between vocational and non general upper secondary tracks.

Table 1: Required competences for upper secondary education graduates in Mexico after the RIEMS by type of upper secondary education

General Baccalaureate	General Baccalaureate with training for work	Technical Baccalaureate and CONALEP
Generic	Generic	Generic
Disciplinary (Basic)	Disciplinary (Basic)	Disciplinary (Basic)
Disciplinary (Extended)	Disciplinary (Extended)	Professional (Basic)
	Professional (Basic)	Professional (Extended)

The gist of the RIEMS reform, according to the SEP, is nevertheless chiefly to do with changing the educational experience rather than just enacting curriculum changes. Thus, a range of support mechanisms have been put in place to help in the implementation of the reform for all strands of upper secondary education, including:

- guidance, tutoring and individual student support (important in particular to prevent drop-out);
- teacher training (this is being piloted from November 2007 and more generally in periodic waves since April 2008. Currently over 20,000 teachers, selected according to the priorities of individual schools, are taking part in training courses. The programme will be rolled out nationally from August 2009. Its importance partly derives from the fact that over 40% of upper secondary school

teachers in Mexico have not completed a University degree). This mechanism, a key initial step for the reform to materialise in the classroom covers training on the production of didactic materials, assessment of competences and pedagogic strategies amongst other topics;

- equipment and schools (the SEP is currently defining the minimum infrastructure that is required to deliver different types of upper secondary courses and further investment is being ring-fenced accordingly);
- professionalisation of the management of schools (through training for current principals and the introduction of competitive procedures -including examinations, the preparation of an academic plan for the school to which they are applying and a recorded interview- for the selection of new ones;
- integral evaluation (of learning, teachers, school directors, subs-systems and specific programmes)
- transit between systems (State and institutional) of upper secondary education;
- single national diploma (in addition to that provided by the educational institution).

The design of the reform has been careful in the staging of its different elements. Thus, the design of the expected profile of the upper secondary graduate took priority and fed into curriculum design work within the CCF, which in turn, has had a strong influence on the design of the teacher training programme currently being piloted and investment decisions in infrastructure. The reform has endeavoured to find common points between different upper secondary education systems and has not tried to completely substitute previously operating systems, but rather to provide them with coherence and transparency at the national level, while developing certain elements that were lacking.

As already mentioned the reform was informed by previous reforms in vocational education and training such as the BTe and CONALEP reforms—in fact, as reported by the SEP, the BTe is at least one year ahead of other streams in the implementation of the RIEMS. The BTe reform, in particular, already advanced many of the themes of the RIEMS<sup>10</sup>. The Mexican government expects that, if successful, the reform will initiate parallel changes in primary, lower secondary and tertiary education.

### ***The processes of initiating/ designing the innovation***

The Secretaría de Educación Pública (SEP –Secretary of Public Education) led the initiation of the RIEMS. The SEP undertook from 2006 a national diagnosis that determined the need to articulate and give upper secondary education an identity of itself to increase access, retention and relevance. The initial proposals for reform from the SEP received early inputs from CONAEDU -the Consejo Nacional de Autoridades Educativas (National Council of Education Authorities)-, and ANUIES, an institution that represents over 150 higher education institutions. These initial stages received the support of employers' representatives, as employers also perceived that students coming from upper secondary education lacked the basic skills needed for employment and that greater system transparency was required. During the process of initiation and design of the reform, the following agreements were established with the consensus of CONAEDU and ANUIES:

- creation of a national system of upper secondary school in a framework of diversity;

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<sup>10</sup> see case study on the BTe reform in this report for further details.

- a common curricular structure for upper secondary education (based, as already highlighted, on generic and basic disciplinary competences);
- teachers' competences profile;
- head of school competences profile;
- possible variations within the national system of upper secondary education; and
- establishment of a national strategy for dissemination of the reform.

During the case study visit, employers' representatives reported ongoing contact with the SEP during the process of the design of the reform (including the process of definition of the CCF) saying that contacts had been more extensive than in the 2004 BTe reform. These contacts were mainly articulated through the 'Consejo Coordinador Empresarial' (Employers' Coordination Council), the highest platform for employer representation in the country, which made direct proposals for strategic changes to be included in the reform, including the need to proceed to direct the system towards competence-based approaches. Later employer inputs were provided through the 'Consejos Estatales de Vinculacion' (State Liaison Councils), which nevertheless need, in the views of employers, to still take a further role in the reform by feeding labour market information from sub-national to the national level. More broadly representatives from employers reported that the reform had been responsive to their needs and had met most of their requirements for upper secondary education. The need for further articulation at the local level to ensure adequate implementation of the reform, through the work of schools 'Local Councils' where schools, employers and chambers of commerce come together was noted.

The main document outlining the reform was produced by the SEP in January 2008<sup>11</sup> and includes inputs from CONAEDU, other State authorities not represented in CONAEDU, ANUIES, the Council of specialists of the SEP, UNAM (Mexico's National Autonomous University, the National Polytechnic (Instituto Politecnico Nacional) and different experts on education).

Since then, progress has been underway in the further specification of each of the reform strands previously outlined, with the participation of a larger set of stakeholders. Taking the process of development of the generic competences to be included in the CCF as an example, an agreement by CONAEDU, composed by representatives from the Mexican central administration and individual States, and ANUIES in September 2007 resolved to discuss the generic competences that upper secondary education graduates should have. The proposals they generated were discussed with the States and in a subsequent phase with regional technical teams (grouping several States) and external experts from ANUIES, which have worked in related topics over the last decade. As a result of this work each region produced a draft document that then presented in a national discussion meeting with the SEP, where the final document was agreed.

The final generic competence profile adopted was thus the result of workshops and discussion sessions in which representatives of the States and ANUIES participated – as they later did in relation to the definition of disciplinary competences. The final legal approval (in the form of an 'Acuerdo Secretarial') of the generic competences for upper secondary education came in September 2008. During this process the initial document was changed in several important respects, in particular to include multicultural aspects into the adopted generic competences. The process for the approval of disciplinary competences—in particular extended disciplinary competences—took place later than that of generic

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<sup>11</sup> For a description of the elements of this reform see SEP (2008) 'Reforma Integral de la Educación Media Superior en Mexico: La creación de un Sistema Nacional de Bachillerato en un Marco de diversidad.' SEP, Mexico.

competences and varied somehow in the range of stakeholders included in the process (e.g. Mexican discipline related societies –such as the Mexican Mathematics Society- were included in it).

The further definition of the professional competences–crucial for vocational education and training courses–is lagging behind that of generic and disciplinary competences, although they benefitted from a recent redefinition during the BTe reform. According to employer representatives the 2004 adjustment was necessary, but greater work is required in the definition and organisation of professional competences. Such work started in November 2008 and has so far laid the groundwork for over 280 professional pathways into 20 fields of professional training. CONOCER, which did not participate strongly in the definition of other types of competences within the CCF, reported that it will link with the productive sector and will play a greater role in the development and definition of these competences, which will be common rather than vary by subsystem –cf. section on implementation below in this case study. This will also link with other CONOCER work as this organisation is currently in the process of simplifying the existing system of professional standards in Mexico, radically reducing its numbers in light of evidence that most of the existing 633 CONOCER registered standards (‘normas tecnicas registradas’) are not used in practice. These professional standards and CCF competences could in the future be mapped to a national catalogue of qualifications–which is not yet available-, to increase transparency and enable lifelong learning.

A crucial aspect of the reform is that, in these processes entailing the definition of the CCF and wider RIEMS discussions, representatives from the different Mexican subsystems of upper secondary education –with their own standards and curriculum structures- gathered together for the first time to discuss the commonalities that tie them together, something that was considered by many stakeholders unthinkable until that point. Therefore on the whole, and as reviewed in the previous discussion, the RIEMS involved a wider range of stakeholders in its process of initiation and design than the BTe reform. Two notable exceptions were trade unions and teachers’ unions. The absence of teachers’ unions was partly explained by the difficulty of selecting a representative due to the sheer number of them for upper secondary education (as over 100 teachers’ unions exist). According to government officials, teachers’ union were nevertheless content with the RIEMS as it opened new ways of progression for its members through teacher training programmes and more transparent selection procedures for the position of principal. Unions, indeed, were mainly engaged through information sharing rather than included in the process of design of the reform. Although this may make implementation more difficult later on, the first steps of the reform have been taken with few signs of opposition amongst unions against the measures adopted. Whether that implies acceptance of the RIEMS from unions or simply a sign that unions and teachers more generally believe that they will be able to bypass some of the difficult changes associated with the reform in practice required by the reform is an open question. Parents and student representatives were also marginally involved in the design and initiation of the reform. Their views may have been useful in terms of addressing, amongst other topics, parity of esteem issues between different strands in upper secondary education, which is a key concern in relation to vocational education and training in Mexico, as in other countries.

### *Use of the knowledge base*

The reform has made use of both international and national knowledge. International comparisons were used, mainly, at the time of needs analysis, to benchmark Mexican enrolment rates in upper secondary education with those of other OECD countries and identify the necessity for reform. Policy reports on reform processes in Europe (such as the European Qualifications Framework) were reviewed at the next stage, at the time of the design of the reform, most notably to highlight the possibility of transparency and unity within diversity in the organisation of education and training. The EU was thus highlighted as an example of integration of diverse systems and the importance of a competence based approach was emphasized in the definition of the profile of graduates. Attention was also devoted, more

specifically, to France, Argentina and Chile, where schools in secondary education have a set of fundamental common objectives. These international analyses were presented to a wider public during the National Dissemination Day for the RIEMS (February 2008) and other events. UNESCO has also participated in the definition of the profile of graduates and curriculum design within the reform. Employers expect that observation of international standards will play a role in the forthcoming definition of professional competences for upper secondary education.

A wide range of national experts participated in the design of the different strands of the RIEMS. They included, as already mentioned, ANUIES for the definition of competences, a process in which now the productive sector will also play a stronger role as professional competences are re-examined; ANUIES and the 'Universidad Pedagógica Nacional' (UPN –National University of Pedagogy) in the design and delivery of teacher training programmes (PROFORDEMS) and soon for school principals (linkages have been established with institutions in Spain and France to design these courses); teachers in the definition of the profile of graduates and curriculum design. A wider range of administrative and survey data such as data on sectoral labour force demands produced by the 'Observatorio Laboral' (Employment Observatory –part of the Ministry of Labour) was also sought and used by the SEP for policy-making purposes.

The RIEMS used the experience of the BTe 2004 reform largely as an unintended pilot, as both reforms shared a range of features, including their focus on the development of competences and learner-centred teaching. Although the new reform builds largely upon some of the innovations introduced by the BTe reform and other reforms in upper secondary education(see above in this case study), it has not always been able to benefit from evaluations of these reforms, as they are largely lacking (see BTe case study in this report). Thus some of the assumptions upon which the reform has been designed (e.g that a more transparent upper secondary education system can contribute to the creation of greater access and retention) will require testing in the coming years, and will also be affected by the result of current discussions on the extension of the compulsory education age. It is important to note that existing monitoring activities of student performance (e.g. in relation to dropping-out and achievement) and the activity of 'multiplying centres' ('centros multiplicadores') which aimed to provide mutual learning and support opportunities between upper secondary education institutions in the context of the BTe reform) have reported positive results. Some specific piloting has been undertaken in the reform strands, such as teacher training –cf. also above in this case study.

Social partners and private foundations also produced a range of studies and provided information that fed into the reform, including studies on the use of educational resources. Some States (such as Nayarit) have, moreover, created their own institutes for educational research to map progress made as a result of the reform and other policies and design customised education actions. They have also established partnerships with educational institutions abroad to train researchers in this area, reflecting an increasing interest in the creation of research evidence to guide future actions in this education and training.

Mutual learning at the school level has been enhanced within the context of the reform through the use of academic networks ('redes académicas') that will group the experience of different types of schools to develop pedagogical strategies to implement the reform, building on the experience of multiplying centres. Some schools have additionally established an internal contact point for teaching staff who require further assistance with any of the elements related to the implementation of the reform.

According to employers, greater mechanisms for continuous feedback would also be required to establish a link between the work of Local Councils which bring together schools and the productive sector (see also above in this case study) and upper levels in the system (regional and national) to ensure its responsiveness to economic needs. COPARMEX, one of the largest Mexican employer organisations, is currently trying to articulate such feedback loops at the regional level.

A particular area where a knowledge gap existed has been in relation to the resources needed to implement all strands of the reform. This has been developed in an incremental way as particular reform strands have become operative.

### ***Implementation***

Much of the work on the actual implementation of the initiative has been in relation to information campaigns and raising awareness. In addition, the RIEMS has started its implementation in Federal schools and decentralised parts of the BTe from August 2008 –the BTe already had implemented several elements of the reform since 2004, as already pointed out. The rest of schools will implement it from August 2009.

The importance of information campaigns is central, as one of the main causes for resistance to change can be lack of knowledge over proposed innovations (see also section on lessons learnt) in particular since teachers' representatives were not directly involved in the reform design. Several dissemination activities have thus been undertaken so far, including a National Dissemination Day for the Integral Reform of Upper Secondary Education that took place in February 2008, where the aims, international benchmarking, basic principles, common curriculum and national system for upper secondary school were presented to heads of school and other stakeholders. Local, regional and national workshops with teachers have also been taking place, since 2007 and as the reform process evolved, on generic competences; disciplinary competences (basic and extended); and curriculum development.

Radio (at the State level) and television (at the national level) programmes have also been employed to disseminate the RIEMS. These programmes have been seen by third parties as providing an impartial voice outside the SEP in relation to the reform and answered basic questions about the RIEMS. Around 240,000 CDs have been prepared and will be distributed amongst teachers, including information videos with open debates about the reform and the Secretarial Agreements that adopt it.

An issue of particular importance to VET is the definition and management of professional competences and their link to the labour market. In this respect it is important to note that future competences' needs will be defined by the productive sector by means of the so called 'Comite de Gestion por Competencias' (Committees of management by competences) whose composition is currently under review, to include company owners and managing directors, chambers of commerce and trade unions grouped sectorally with the aim to better represent the interests of industry. The standards linked to the competences identified by these Committees will then be developed by technical working groups made up of operations managers, instead of representatives from human resources departments as had been the case in Mexico. The standards will be registered upon fulfilment of a series of requirements such as being proposed by industry leaders, developed by technical working groups as described previously. They will be managed through the CONOCER and different institutions (schools, but also companies, trade unions, chambers of commerce and other interested organisations) will be able to apply to accredit and certify the individual achievement of competences, instead of the current situation where CONOCER issues competence certificates. As mentioned, the competences covered by formal upper secondary education and training programmes will be mapped to professional competences that are developed. CONALEP will support CONOCER to train the range of new stakeholders to enter the training and certification system in key aspects of the reform, including the new orientation towards a system based on competences.

It is too early to pronounce a judgement on the implementation of the reform given its recentness. Many of the elements of the reform are considered by stakeholders interviewed to be steps in the right direction. It remains to be seen whether the SEP and other stakeholders will be able to make available the human and financial resources to fully implement the reform and so that it may reach the final ambitious objective of changing classroom practices to enhance the attractiveness and relevance of upper secondary education. An example of the new capacity demands created by the reform can be provided in relation to

the selection of principals. Though in the past this was done at the school level, the SEP now reviews applications. Although a competitive recruitment process was expected, the number of applications currently received has exceeded all forecasts, with applications for the position of principal in some schools exceeding 70 applicants.

A further critical issue for implementation is whether teachers will have sufficient knowledge and know-how to implement the reform. Whereas during the case study visit evidence was gathered in relation to the internalisation of the reform discourse by teachers (e.g. in terms of the importance of learning oriented teaching and a learning outcomes approach) it largely remains to be seen how this will be applied in the classroom. Although teacher training programmes are a step in the right direction, it is clear that their current extent is limited, and further targeted support at the time of implementation of the new concepts and pedagogical techniques in the classroom require further follow-up and support. Teacher training institutions are, nevertheless, already facing some capacity limits given the scope of training currently being required from them. The Mexican government is aware of this need and is currently examining possibilities to further support teachers in the implementation of the reform.

### ***Monitoring and evaluation***

Several elements are in place or are being set in place in relation to monitoring and evaluation of the RIEMS. During monthly meetings of the CONAEDU there are reports and discussions about the implementation of the different strands of the reform. Agreements are reached during these meetings in relation to future implementation issues and joint implementation actions. A special committee has been created to monitor and evaluate the Mexican national upper secondary system. Evaluation committees have also been created for the design of the mechanisms of the evaluation of different strands of the reform (including, amongst others, teacher training programmes and competence achievement in upper secondary school).

The 2008 National Employment Survey (Encuesta Nacional de Ocupación y Empleo, ENOE) included a special module on the educational and employment pathways of secondary school graduates (Encuesta Nacional de Trayectorias Educativas y Laborales de la Educación Media Superior - ENTELEMS) that will for the first time in Mexico, provide information on the employability of graduates from different educational strands and will generate other relevant information for policy-making in upper secondary education (such as profile of drop-outs, time from graduate to stable employment, etc.). Although previously some of the vocational strands in upper secondary education (such as CONALEP) collected some data on students' destination, this information was in general patchy and not statistically robust. The ENTELEMS results are currently under analysis.

ENLACE Media Superior ('Evaluación Nacional del Logro Académico de Centros Escolares' a census survey launched in 2007 to test the level of acquired competences in maths and language in upper secondary education) and PISA will also serve as tools to monitor progress made in relation to the development of generic and disciplinary competences in the Mexican context. Assessment of professional competences, the thrust of vocational training, will be made through their mapping to national professional standards developed by industry in partnership with CONOCER and documented through portfolios. Evaluation of performance within delivery institutions therefore will review whether the standard has been achieved by individuals or not, rather than the more nuanced view provided by ENLACE Media Superior for generic and disciplinary competences.

At the school level, upper secondary education institutions are subject, from 2007, to tighter monitoring mechanisms than in the past through the submission of information on a range of over 100 indicators to the SEP and their requirement to prepare a plan for continuous improvement on self-selected

priority areas. This information is publicly available with the aim to increase transparency in the system. The information thus collected can also be used to monitor progress on different aspects of the RIEMS.

While different strands of the reform will be monitored and evaluated, an overall evaluation strategy for the RIEMS has not yet been designed. There is therefore a certain risk that evaluation processes may be disjointed in the near future.

### *Lessons learnt*

This case study of the Mexican RIEMS reveals several policy lessons. Consistent with the focus of our research, we concentrate on those lessons that can be extracted on the use of knowledge and the involvement of stakeholders.

First, a degree of policy learning can be observed from the BTe 2004 reform. The RIEMS reform reflected the importance of adopting a holistic view with the aim to improve the result on the bottom line (access, retention, relevance) of upper secondary education in Mexico, including its VET strands. Thus, changes and re-adjustments have not only been included in relation to curriculum design but extensive changes have also been introduced in relation to teachers' training, the professionalization of school management and the support to be provided to students (both financially through grants and in terms of guidance) for them to progress in upper secondary education. The implementation of these strands has been staged in a logical way, designed after consultation with stakeholders from education and industry. Although the existence of the 2004 BTe reform could be considered an unintended pilot for several aspects of the RIEMS and some further piloting has been undertaken in some of its strands (e.g. teacher training) this is not yet a mainstream practice. Greater use of pilots would add to the knowledge based employed in the final design of the reform.

While the design of the reform has been clear and efforts have been put into communicating this to stakeholders, there has been less clarity in relation to the resources necessary for implementation, both in terms of budgetary allocations and human resources required. This was echoed in discussions with the SEP and other stakeholders which argued that insufficient time had been devoted to aspects such as the definition of the profile of upper secondary graduates (the centrepiece of the reform) and the design of the current teacher training programmes. A second area where greater knowledge may be required is in the development of know-how by teachers to implement the reform in the classroom, an aspect for which they will require additional support. This is acknowledged by the SEP, who sees the RIEMS as a radical change that will take time to materialise and its current shape as an initial stage towards greater and deeper change in upper secondary education in Mexico.

Most progress in the RIEMS has been achieved by building on existing systems in upper secondary education and attempting to find points for agreement within diversity. An example of this is the use of two certificates for upper secondary education (the new national certificate for upper secondary graduates will be a supplement, rather than substitute, certificates previously issued at that level). Similarly, the upper secondary graduate profile constructed under the reform is a minimum threshold to which individual institutions can add depending on their particular aims and profile. According to the SEP the crucial point was to reach agreement on the final objective to be achieved and work from there with stakeholders. It is important to note that many of the potential points of resistance of the reform were mitigated thanks to the advanced stage of implementation of some of its strands in the BTe as a result of the 2004 BTe reform BTe.

In relation to stakeholder engagement, education and industry representatives were part of a two-way dialogue in the design of the reform. In this respect, the reform may result in the beginning of a new culture of wider dialogue within upper secondary education in Mexico, not least between the different

subsystems delivering this type of education. However only time will tell whether this finally becomes institutionalised. Whilst the reform put substantial emphasis on inter-institutional agreement in relation to its main aspects (most notably in relation to States and different strands of upper secondary VET) there has been a noticeable lack of active engagement of teachers. Beyond those who participated in the design of competences, teachers have mainly been informed about the reform rather than actively involved in discussions. The lack of a clear institutional representative for teachers was acknowledged during the case study. Yet, it could have been of benefit to articulate such representation to add more tangible teacher views to the reform design.

An additional lesson is the emphasis the Mexican government is placing on enhancing system transparency by increasing the collection of monitoring information on the characteristics and performance of institutions within the different upper-secondary sub-systems, and on improving assessment mechanisms and strategies. These new practices place some additional demands on schools and may generate resistance, yet they are useful for a variety of purposes. As such, the information thus collected is being made available to parents and other stakeholders to inform educational choices. Whether the government additionally uses this increased wealth of information as the basis for a continuous dialogue with stakeholders or not remains to be seen, but there are initial indications in that direction.

Finally, the Government found three types of resistance from different stakeholders: (1) resistance to change; (2) resistance caused by lack of information (this is being addressed through an innovative dissemination strategy for the reform); and (3) genuine resistance to the proposed change (which has not been large in relation to the RIEMS and is perceived by the SEP as a mechanism that enables improvement of proposals for change). The case study has demonstrated the importance that change is not perceived as aggressive by the affected stakeholders, in order to overcome these resistances.

### **Case Study 3: Linking public and private resources to improve worker preparation and training in the Mayan Riviera (Playa del Carmen Project)**

#### ***Background***

The Riviera Maya is one of the most important tourist destinations in Mexico, with an inflow of approximately 3 million tourists in 2007. It is located in the 120 km stretch of coastline along the Yucatan Peninsula from Cancun in the North to Playa del Carmen, Tulum, and Chetumel in the South of the Peninsula. Prior to the growth of the tourism sector, the coast was mainly characterised by small fishing villages with a sparse population. The past few years have seen the birth of numerous all-inclusive resorts and boutique hotels in the Riviera, a testament to its flourishing tourist industry and thriving economic growth; a trend that is foreseen to continue.

Projections made by the Association of the Hospitality Sector in the Mayan Region show that the sector is estimated to grow from 35,000 rooms in 2007 to 80,000 rooms in 2020. According to hotel sources, the number of jobs per room varies, depending upon the level of service intensity, from 1 to 1.7 jobs per room, with the majority of them at the operational level. For each job created within the hospitality sector, the Secretariat of Public Education (SEP) estimates that an additional 14 jobs are indirectly created.

A number of drivers have led to major changes in the public training provided to the sector in the Region of the Riviera Maya - a transformation process still evolving at the time of the visit. The most important changes are:

- Change of educational orientation and organisation aligned to industry needs;

- Change of locations and course schedules aligned to the working schedules of professionals within the industry;
- Adaptation of pedagogy to align with actual work processes and the occupational roles in the productive sector through the workshop concept and use of professional equipment;
- Up-skilling of industry trainers to align to scope of demands.

Major socio-economic drivers of change specific to developments in the Riviera Maya have been:

- Deregulation of land ownership legislation, which has facilitated foreign ownership of land;
- The socio-economic importance of the tourism sector;
- Formalisation of a sector voice through the creation of the Association of the Hospitality Sector in the Riviera Maya;
- Scope of demand for employees, and filling these jobs at the operational level is dependent on inward migration;
- Pressures from international investors into the region.

At a sector level, hospitality is one of the main economic sectors in Mexico. In recent years, Mexico has attracted considerable international inward investment in the sector, most notably in the Mayan Riviera region. Pressures have grown to deliver adequate skills numerically and qualitatively. Parallel to the reforms of the training supply to align to the needs of the tourism sector, the Federal Government has already initiated a dialogue with lead industry representatives from other structured sectors of the economy, which are also marked by pressures to raise the skills level in a substantial way, such as the automotive sector. The purpose of the dialogues, with CONOCER as a lead player, is to obtain a deeper insight into the industry dynamics and the competitive strategies as the point of departure for aligning the curriculum in the different parts of the VET sub-systems to the industry needs. The prioritised sectors in the first phase are automotive, sustainable energy, ICT, software, construction, and tourism. All these sectors share their dependency for economic growth and productivity on the skills of the workforce. The transformation of the VET system into one that is capable of understanding industry dynamics as sectors develop is vital to the creation of jobs and the improvement of the productivity and the economic competitiveness in Mexico.

The case of the Mayan Riviera, which has been identified as the most prominent tourist destination in Mexico, is situated within more recent reform measures aimed at making the training system more responsive to industry needs, particularly regarding prioritised sectors with growth opportunities such as the hospitality sector. Through the interventions of the Association of the Hospitality Sector and dialogue with training suppliers and with individual hotel human resources managers, the aim is to build sustainable public-private partnerships to develop a responsive training system situated in and adapted to the competitiveness and growth strategies of the hospitality sector. The demands and drivers for change are set in a regional context of a sector largely dependent on inward immigration of individuals with generally low skills levels and no previous work experience in the hospitality sector. Furthermore the public training infrastructure has been supply driven.

### ***Importance in the context of national VET policies***

As mentioned in the introduction, the competitiveness of the Mexican economy has decreased according to the most recent ranking by WEF. This has caused considerable policy concern and has led to debates in the Federal Ministry of Education on how educational public policy can contribute to economic competitiveness, particularly in those sectors of the formalised economy with growth opportunities and inward investments. At the system level, CONOCER has been assigned the leadership to bring industry leaders from the structured sector of the economy to the table and commence a dialogue among the relevant stakeholders on how the VET system can be aligned to the dynamics and the competitive situation

of the productive sector. The case of Playa del Carmen is thus situated within a broader systemic effort to align different sub-sectors of VET to the demands of industry, with the current main focus on the structured sectors of the economy. Where Mexican public policies have addressed traditional areas such as monetary policy, fiscal policy, and basic infrastructure, the interdependency between competitiveness and the quality of the labour force has not yet been clear in the policy agenda. With the ongoing restructuring of CONOCER, and the tasks it has been assigned, a process has begun to re-situate training in the competitiveness agenda which is perceived by government representatives to be the best means to also improve social conditions. This process of innovation is illustrated by the case of Playa del Carmen.

### ***The process of initiating/ designing of the innovation***

Prior to the establishment of the Association of the Hospitality Sector, training in the region mainly targeted other sectors and had according to several sources mainly a social orientation.

As the hospitality sector gained a foothold in Playa del Carmen, so did the training needs both in numerical and in qualitative terms. Yet according to some sources these remained largely unanswered.

From a design perspective, the formation of the Association of the Hospitality Sector was the first critical precondition to the innovation process. Prior to that, the sector's needs were largely unknown and went unrecognised. Once the Association was formed it gave a common and legitimate voice to the needs of the sector as a whole, which went beyond the capacity of individual members of the hospitality sector. Another factor critical to the design process was that the Association as one of its first efforts collected baseline statistical information about the sector. These data demonstrated the scope of training needs within the sector both in quantitative and qualitative terms if the projected growth rates in the region were to be realised.

Yet the design of the innovation was in the first phase quite fluid in a temporal sense, characterised by an increasing dialogue between the supply and the demand side, ad hoc and to a large extent dependent upon personal relationships. The evolving dialogue between the Association and the suppliers has on an on-going basis led to some improvements in the contents as well as in the modes of supply of training.

From a systemic innovation perspective structural changes are recent and still evolving. Nevertheless, from a process perspective the on-going dialogues between the Association of the Hospitality Sector and the public providers- notably ICATQR should not be underestimated because they have contributed to the formation of a partnership and more regular dialogues and feedback between the association and the local training providers- elements which are critical to the development of a demand-led system.

From a process of change which was quite subtle and fluid in the first stages, one particular event marked the start of an innovation process of a more systemic nature. In 2007 Spanish investors approached the Mexican president to discuss their dissatisfaction with the quality of training offered to the hospitality sector in the Mayan region. If appropriate measures were not taken instantly, the investors were ready to substitute labour from Spain for local labour, in order to have a workforce capable of matching basic quality standards in a highly globalised and competitive sector. Through SEP, the President took immediate action to commence an alignment process of the training supply and the organisation of the supply to industry-defined standards. In the first phase the innovation has been designed to primarily focus on the operational level, because this level constitutes the majority of jobs within the sector, and training needs for this group of employees are immense.

### ***Use of the knowledge base***

Adequate and sufficient flow of information during the policy cycle of reform is critical to the perceived relevance by users, to trust and uptake of outcomes, and to inform scaling at a later stage. In the

case of Playa del Carmen and the scaling up to other sectors of economic activity, there are questions concerning which approaches are most suitable to identify lead industry representatives and which measures are necessary to engage them in dialogue about industry dynamics specific to each sector and as a frame for identifying skills standards. Engaging stakeholders in the identification and creation of reference standards could not only lead to more informed decisions in the processes of change, but could also strengthen the institutional capacity to react to industry demands.

At the operational level, different knowledge sources have been and are still critical to the different phases of the innovation cycle. In this case, it is characteristic that the collection and deployment of knowledge sources have had an operational and instrumental focus intended to build baseline information on sector training needs, and secondly on user satisfaction about training supply. Furthermore, the knowledge generation processes at the operational level have most often been unstructured, personalised, and ad-hoc with limited systematic approaches and feedback mechanisms for understanding the needs of individual hotels as they evolve and possibly diversify.

In the decision making phase the voice of the industry has played a central role in the president's decision to inform SEP to take immediate strategic action to adapt to the demands of the industry. However, prior to this phase the dialogue was beginning to develop between the ICATQR training centres and the Association of the Hospitality Sector, which had already led to some adaptations of course contents and modes of delivery.

In the design phase, the Association for the Hospitality Sector played an enabling role in formulating the needs of the sector through the collection of baseline statistical information about the composition and projected growth, including the composition and size of different occupations in the sector. The availability of this baseline information in terms of demonstrating the scope of projected training needs within the sector – short term and in the years to come – should not be underestimated. Furthermore, information collected through Human Resource managers in the hotels about the qualification profiles of incoming labour force to the sector has provided further operational documentation about the types of skills needed within and across all occupations (such as communication skills, numerical skills, basic ICT, English, and service orientation). The baseline information about sector needs set off a first dialogue about the sector's training demands between the Association of the Hospitality Sector, the General Director for ICATQR, and the Local ICATQR training centres.

In the implementation, monitoring and evaluation phases there are two knowledge sources that are particularly relevant, and a third that is gradually evolving.

- Pilots can be a central source to understanding what works and why. In the case of Playa del Carmen, the ICATQR has systematically planned and used pilots, budgetted for in their annual budgets. Prior to launching new courses, a pilot is carried out to optimise course content and delivery to the specific use.
- Users are another potential source of innovation – if the appropriate mechanisms are in place to engage with and learn from users. In the case of Playa del Carmen, the deployment of user insights occurs at a very basic level through customer satisfaction surveys targeting participants and specific hotels within the industry. This input is used to adapt supply, but at this stage there is no formal knowledge generated about the relative value-added compared to a similar supply from other providers, nor about the relevance of the supply in an employment and employability perspective. This may not be critical at present, given the current demands for qualified labour within the hospitality sector. However in the medium-term, as demands begin to stabilise, other forms of accountability measurements may be needed to decide where public funding for training provides the best value.

- A direct dialogue with lead users is a source of market-led innovations. In Playa del Carmen, a dialogue between specific hotels and ICATQR centres has started to evolve. The dialogue can be an important source of alignment with regard to adapting existing supply and to identifying new training areas to inform future pilot initiatives. However, at this stage, the dialogue is highly personalised and occurs in an unstructured manner with no institutionalised mechanisms for feedback or processing and transformation of the feed-back into the training offer.

Training is provided by a range of providers as well as the hotels themselves- but with no clear patterns of diversification concerning target groups. The training for the hospitality sector is evolving in a range of dimensions both with regard to locations where training is offered, training approaches and types of courses offered. In a phase of rapid development, sharing of experiences can accelerate change. Nevertheless, there are currently no mechanisms in place so that experiences can be shared between different trainers and training suppliers to the sector. From one perspective, training demands at the operational level in particular are so immense that at present, there is space for all providers. However, from an innovation perspective a valuable source remains unexploited. Training for the hospitality sector is still a market in the making, and at this stage therefore without institutionalised processes and mechanisms for assessing and understanding training needs medium term. In the formation of a responsive training market, transparency in certifications. Finally, for individual users, or hotels without HRM personnel with limited knowledge about the training providers and the value a given certification carries, greater transparency in certifications could stimulate the motivation to engage in training. The uncertainty about which standards will ultimately be dominant could also delay training providers' investment in an alignment of curriculum, and that way affect the quality of provision negatively.

The innovation was still evolving at the time of the visit, most recently also through the partnership with the Inter-American Development Bank. A proposal has been prepared to strengthen the sustainability of the Playa Carmen case by developing and documenting the core processes in for a public private partnership for market driven training to enable scaling and transfer. In the preparation of the project the government has played a leading role. The focus is aimed to optimise and create value for the hospitality sector through improvements in core processes and in curriculum content so to create a more responsive and adaptive training system by improving:

- **Flexibility in access and delivery mode** through a modular offer and through a multiple location strategy. There are currently five “planteles” (training centres) in operation, through mobile units and through on-the-job training at hotel premises. In an indirect way, access may be improved further by offering adequate caretaking for children of parents in training offered by ICATQR. Such an initiative is being planned in cooperation with the Ministry of Sports.
- **Industry orientation and alignment in content** through dialogues with the Association of the Hospitality Sector and ad-hoc meetings with HRM directors from the hotels, thereby developing an industry orientation in curriculum corresponding to industry work processes through the use of workshops and industry equipment.
- **Alignment to scope of demand** through training of industry trainers.

The innovation of curriculum content and modes of delivery are primarily oriented towards first-time employment in different occupations at the operational level and towards trainers, and trainers of trainers to the different occupations within the industry and at the operational level. The orientation towards the operational level is situated in the context of the composition of the labour force in the hospitality sector:

- **80%** of the workforce in the hospitality sector are employed in operational jobs - cleaning, chambermaids, land maintenance, cooks, waiters, bar personnel

- **14%** work as supervisors and in front line operations such as the reception
- **4%** work as managers
- **2%** work as executives

At the higher levels of occupations, the sector depends on upper-secondary and higher education graduates from the region and from outside the region, on private certifications such as Greenglobe and UniGlobal, and not least on in-house training, at times also with the use of consultants from the private sector.

Until October 2008, ICATQR had trained a total of 11, 396 students encompassing 571 courses. Projections are that the numbers trained by the end of the 2008 will amount to approximately 13,400 students, representing an increase of 20% since 2007, and now with 5 different locations. The tendency is for individual students to take more than one course at a time. The courses and certifications currently offered comprise about 50-60 different topics in specific professional fields such as bartending, baking, cooking, pedagogies targeting trainers in the industry, and a range of generic courses in demand by the hospitality sector such as computing, English, and service courses relevant to the employability of individuals within the sector.

Parallel to the innovation of processes and content of training for the hospitality sector, ICATQR has started a dialogue process to understand and situate training within the specific quality parameters of a given hotel. At this stage these interactions are ad-hoc and highly personalised, and the methodologies applied to understand market needs and the feed-back from these visits are not yet used in a systemic and structured way.

The scale of the innovation has gradually evolved, driven by the following factors:

- The gradual multi-location of the hospitality sector along the 120 km coastline of the Riviera Maya - and the realities in working schedules of employees in the sector.
- The region's dependence on inward migration to meet the hospitality sector's need for employees, particularly at the operational level; individuals typically with limited or no formal qualifications and with no industry-relevant experience.

As the sector has grown, so has access to training. The numerical change comprises the type and range of certified courses offered, location and access, and the range of public and private training providers which target the sector, at times with some overlap in the offer, not least between the courses offered by ICATQR and the offer from the Union (CROC), one of the major unions targeting the operational level. However, the scope of demand is currently so large, given the expansion of the sector, that the problem is likely to solve itself at some stage, according to some informants.

Barriers to a systemic use of the knowledge base are:

- Lack of a structured approach to dialogues between training suppliers and industry. A more structured approach could result in a dynamic knowledge base to be shared among individual trainers, and could as such improve demand orientation in a structured way;
- A limited dialogue between different suppliers which could strengthen the knowledge base and the quality of training to the sector. Medium-term it could also lead to more efficient expenditure,

more comprehensive training, and higher levels of specialisation among the different providers of training;

- An insufficient volume of skilled professional trainers with practical experiences from the hospitality sector as well as skills to train adults for a professional occupation. Monitoring and evaluation

An impact evaluation of the Playa del Carmen case carried out by the Secretariat of Public Education (SEP) was pending at the time of the visit and is expected to be completed at the end of 2008. From the point of view of senior officials in the SEP, the outcomes of the impact evaluation are likely to provide important lessons for aligning skills supply to the industry demands. If the outcomes of the impact evaluation are positive, they could inform the alignment of training for the hospitality sector in other educational sub-sectors of the education system, such as CONALEP or tertiary sector provision, and to other structured sectors of the economy. CONOCER would play a key enabling role in identifying and involving all key actors in the alignment of the training provision to industry needs. At this stage pilots have to some extent been used in an operational manner to optimise training provision. At a system level, pilots have not yet been used as a means for an on-going monitoring of major development measures

### *Scale-up*

At this stage, the scaling mainly occurs within the contained case of Playa del Carmen, primarily in two ways:

- through expansion of the training offer to the sector within the region with surveys, dialogues with the industry association, and pilots used to identify and optimise the training
- through the creation of new "planteles" at different locations, and through in-house training.

At the operational level there are communication mechanisms in place for the dissemination of good practices within the existing ICATQR centres, nationally, state-wise, and regionally, which may inspire some centres to align their supply to industry needs. However, the discussions do not have a formal structure and there are no mechanisms in place to follow the effects of these exchanges.

Through collaboration with the Inter American Development Bank (IADB), the Association of the Hospitality sector is expected to take the project lead with the intention to spur the development of a sustainable model for the alignment of all VET subsystems to the needs of the hospitality industry. This could lead to a deeper systemic knowledge about the processes of adapting education to the dynamics of the productive sector.

Furthermore, the case material provided prior to the visit gives reasons to believe that the collaboration with the Inter-American Development Bank could lead to developments and field tests of methodologies that can be applied more widely in complex development projects, where systematic feedback from the different stakeholders involved can be the basis for knowledge-based user-led innovation.

The conceptualisation of the innovation occurred in 2007, although building on previous incremental improvements and the dialogue that had commenced between the sector association and the local training suppliers. The actual implementation has been delayed, with expectations that the proposal will be approved by the end of year 2008. The funding from the IADB is USD 2 million, based on a co-funding model, and will cover processes but not equipment investment. The planned dimensions of the collaboration with the Inter-American- Development Bank could lead to a better understanding of the

critical processes in developing a responsive and demand-led system. Some of those features involve models of public-private collaboration for raising the competitiveness through technical training, and formalised methods to measure outputs and wider programme outcomes.

To exemplify, processes of defining skills references which previously built on the formation of ad-hoc professional expert groups, will now be developed and implemented to situate demands in a broader context of why companies are recruiting from where, what the concept of quality service covers, and the use and purpose of certifications. From these questions and types of processes, IADB expects that the lessons learned from the Playa del Carmen initiative can inform the definition and formalisation of industry-driven processes of change in other sectors of the economy with a high demand for a better qualified workforce.

Though industry dialogues have started within other sectors of the structured economy, processes to more widely transform public training provision were still pending, waiting the outcomes of the impact evaluation of the Playa del Carmen case.

There are a number of potential barriers to an immediate scaling of the Playa Del Carmen to a system-wide innovation, even if the impact evaluation shows positive outcomes. According to official sources, the shared governance model between the federal level and the state level implies that localised innovations have to be negotiated case by case with the relevant states, a time- and resource-intensive process. Another barrier is associated with the recent transformation of CONOCER. Given the previous failure of CONOCER, the Federal Department of Education is waiting to see CONOCER under new leadership can, on the basis of discussions on lead industry skills standards, scale the process of change to a level of consensus among lead players within industry. If successful, this could lead to national industry-endorsed standards. Though the impact evaluation of the Playa del Carmen case will likely inform decisions made concerning future investments in training reform, it is still to be seen if the evaluation will also contribute to the knowledge base about which type of processes are critical to systemic innovation. Because the transformation of the VET system is very recent, deeper insights not only into the outcomes of innovation, but also into the processes of innovation, could provide valuable insights which medium-term could impact efficiencies in the transfer and scaling of the critical knowledge processes relating to alignment of VET curriculum to other educational sub-sectors such as CONALEP and the BTe, as well as to other sectors of the economy.

### ***Lessons learnt***

The Government has undertaken an immense task of reorienting the VET system in order to situate public educational policy in an agenda of improved competitiveness. At the time of the visit the transformation process within labour market training was relatively new, and could if successful assist in overcoming traditional tensions between the social and the economic roles of VET. The case of the hospitality sector is of interest because it demonstrates how innovations can drive both equity and economic development. The Playa del Carmen case is furthermore of broader interest due to the ways in which it has evolved. In the first phases, the processes of change have been quite fluid and mostly resulted in incremental improvements. Yet the first stage changes should not be underestimated in the context of understanding bottom-up innovations, such as the case of Playa del Carmen, because the first phase provided parts of the preconditions to a more responsive VET system. One element in this is the formation of the Association of the Hospitality Sector as a representative of industry needs. The other element has been an emerging dialogue between providers and industry, albeit in an unstructured and one-by-one manner. The innovation accelerated and took on distinct bottom-up features once industry pressures to raise the quality of the local Mexican labour force were taken to a level that could have threatened inward investment in the hospitality sector in Mexico. As such, the case has been strongly situated in wider economic interests, which could explain how the case has evolved from a rather fluid process of

improvements to a full-fledged case where substantial resources are devoted to create a responsive and demand-led training system with expectations that it will contain model features and processes which can be scaled and transferred to other sectors and/or regions.

Even if the impact evaluation of the Playa del Carmen initiative could show positive outcomes, challenges remain with regards to transferring and scaling the initiative to other sectors of the economy and to other VET sub-sectors. The dialogues that have commenced between CONOCER and the structured sectors of the economy could be a factor to enabling a wider scaling and transfer to other sectors. However, critical to success is how the alignment process for the hospitality sector is communicated to industry leaders in other sectors as a value added from a perspective of competitiveness. Only then is it likely that industry leaders from other sectors will come to the table to discuss industry-led standards, which agreed upon across the formalised sectors of the economy could lead to systemic innovation within VET. A potential barrier to a future process could be that the Mexican VET system is not an old institutionalised system such as for example the German VET system. Therefore there is not to the same extent a well-defined knowledge about whom to engage in the processes of change and to ensure that decisions taken about reference skills standards are perceived as legitimate in a sector as a whole. On the other hand the lack of institutionalisation could also lead to a more transformative approach to change, compared to those in more institutionalised systems which are often more incremental in nature, as for example the Danish and the German case studies show.

Whereas pilots have been used regularly at an operational level within the hospitality sector to test and optimise the training provision before a wider implementation, formative evaluations do not yet seem to play a central role in a systemic approach to change. Although an impact evaluation of the Playa del Carmen case is well under way, it may not bring insights into the dynamics of innovation – which otherwise could have informed decisions taken as well as the processes of change in other sectors. One of the reasons are that impact evaluations are often constrained by a design that can capture processes, enablers, barriers, and the dynamics between these as they occur in order to explain not only what works, but also why and why not, and what the critical factors of success have been.

Another challenge to the scaling and transfer of the Playa del Carmen case may be linked to timely and targeted communication of the innovation and to how the innovation is communicated more widely to potential interest and user groups. Without such an understanding, the changes being implemented to improve the responsiveness of VET, and thus the perceived value of VET certifications among individuals and at an industry level, may remain unnoticed. Without economic and social recognition of nationally endorsed certifications, the creation of trust in and uptake of VET certifications could be limited. A process of change is not only about content, but also about changes in the perceived value among the potential users of certifications. To stimulate demand and to demonstrate the value of nationally endorsed certifications among employers and individual users alike, the transformation process that has commenced needs to be communicated in a targeted manner to accelerate demand and thus the further development of a demand-led VET system.<sup>12</sup>

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<sup>12</sup> For an example of how policy makers have taken measures to improve the status of VET- through more targeted communication measures, please refer to the case of Australia.

## OVERALL CONCLUSIONS

The overall analysis of the three case studies and of the VET system more generally, reveals a system that is undergoing a process of transformation and in many cases, it can be considered to be still “in the making”. The system is composed of different institutions offering similar professional qualifications, but still not coordinated. VET training centres (“planteles”) are under the responsibility of different institutions, either Federal or of the States, with no clear distinction of the reasons why. Collaboration between VET schools and employers has traditionally been limited and the communication between the government and employers has not always been fluid. Moreover, the system has traditionally suffered from an acute weakness in terms of availability and use of data for policy making and to inform stakeholders. All these factors represent potential barriers that could hinder an efficient and effective introduction of innovations in the system.

Nevertheless, based on the three analysed case studies, in addition to other ongoing innovations that have recently been undertaken, e.g. the new strategic direction of CONOCER, the Mexican VET system seems to be actively engaged in introducing some necessary changes that the system requires in order to face the existing and future challenges of the Mexican economy and society. The important economic and social challenges that Mexico faces seem to have acted as key drivers to create a shared sense of concern on the need for change among stakeholders and create an overall environment conducive to the introduction of innovations. It is important to highlight that this increasing number of initiatives are perceived by many stakeholders, e.g. employers associations, Secretaries of Education of the States, to be the result of the political leadership of the Secretary of Public Education that is playing a crucial role in enabling this favourable environment among stakeholders for innovation.

In terms of the innovation process, although there remains room for improvement, there has been good progress in involving an increasing number of stakeholders in the different phases of the innovations, and in the use of knowledge accruing from statistics and international experiences. These have been analysed more critically, ensuring a better identification of needs and closer adaptation to the Mexican context. The next lines elaborate further on these two dimensions.

The latest initiatives in the VET system have made encouraging progress in involving a wider range of stakeholders, both in decision making and in designing and implementation. In particular, education representatives from the States represented in CONAEDU have been more broadly consulted in innovations such as the ongoing reform of the general baccalaureate, which comprises the technical baccalaureate. This has allowed for the generation of a wider institutional consensus in a relatively complex governance structure, with the existence of multiple sub-systems and institutions responsible for VET. This represents a significant change from the past when in general, as analysed in the Reform of the Technical Baccalaureate, decisions were adopted mainly centrally with limited consultation and negotiation with other relevant institutions.

Moreover, more fluid communication means seem to have been put in place recently in order to improve the necessary bridges with the enterprise sector in order to start identifying and forecasting skill needs and align the VET system to these needs. This has become evident in the case of the Mayan Riviera, where the hospitality industry demands triggered an ongoing process of aligning the VET system to these needs. However, the situation is still far from optimal. There is still further scope for closer and more systematic collaboration with the private sector in other sectors of the economy and in other geographical contexts. A closer involvement of employers would be desirable, both in the definition of the content curriculum as in the provision of workplace training. Moreover, communication and collaboration with other stakeholders, mainly school leaders and teachers unions, is still limited and this has proven to bear negative consequences in the implementation of innovations, such as the reform of the BTe. A more active

involvement of these stakeholders could help identify potential shortcomings from the design phases and guarantee a smoother implementation of the innovations.

With respect to the use of knowledge to guide the innovation processes, there is an increasing and more critical use of knowledge in the design and implementation of innovations, although stronger evidence could still be fostered. New statistical sources are being developed and international studies and experiences are analysed more critically to identify and differentiate between those elements that would be more directly transferable to Mexico and those which would need to be adapted. There is still, however, a lack of systematic and continuous research on VET issues that could identify and nourish the generation, design and implementation of other innovations. The new information gathered for educational centres evaluations and the programmed activity of CONOCER aimed at developing an integrated information system on gender, salary levels, skills or geographical coverage and the results from the “ENLACE” test should partially improve this situation by providing further data to support future actions. Research on attitudes towards VET among parents, students and employers are still missing and data on the transition from school to the workplace are still limited, although new efforts are foreseen to address this in coordination with the National statistics Institute.

In addition, it is also important to highlight the heretofore relatively scarce use of pilots to test the innovation designs before implementing them, especially in those cases with large-scale consequences, such as the reform of the Technical Baccalaureate. Some difficulties in the implementation of this reform, such as the need for teacher training, surfaced and could have been identified earlier if pilots had been carried out. This finding helped identify this challenge for the RIEMS, but there are still no real pilots foreseen for this reform, and other potential problems may arise during the implementation. Although they may have slowed down the implementation process, they would have revealed these deficiencies and allowed for the necessary corrections. In the case of the innovations introduced in the Mayan Riviera, these can be regarded as an unintentional pilot, where the alignment of the VET instruction to the industry needs are being tested and where the application of the lessons learnt and best practices to other regions and sectors are being explored. This potential process of scaling up the initiative may reveal complex as a result of the governance of the Mexican VET system, and the crucial roles that the local industry and the State and Federal governments play.

It is also worth mentioning the role that evaluations play in the innovation process and how they feed back into the policy process. In general, as presented earlier, many of the innovations introduced in the Mexican VET system are on-going and monitoring initiatives have been put in place. However, ex-post and mid-term evaluations are crucial to identify potential changes and needs during the implementation and to feed the policy making process, and so far, evaluation frameworks are still scarce. Nevertheless, there is a growing agreement on the need for evaluations and the government has set a very clear rule of evaluating any adopted initiative. It will therefore become very important to define the necessary evaluation methods and how the knowledge arising from this exercise will be fed into the policy design.

Finally, the case of the Mayan Riviera has also showed that the Mexican system allows for the introduction of bottom-up innovations, accruing from the employers and supported by the public institutions. The scaling-up of these locally concentrated user-initiated schemes requires an active role of the public authorities to facilitate the process and bring stakeholders to the table. For the Mexican case, due to its relative lack of consolidation, this process may encounter some barriers as many times, not all stakeholders count on an institutional rooting, which raises an issue of legitimacy and representation.

## RECOMMENDATIONS

The examination of the two case studies reveals a number of potential barriers that could hinder a smooth implementation of ongoing and future innovations in the VET system. Some of these barriers relate to structural features of the VET system and its integration and appreciation in the overall educational system, while others are more specific to the design and implementation of the innovations. This section of the report suggests a number of recommendations that could help overcome the potential risks associated to some of these barriers:

- **To raise the economic and social recognition of VET qualifications.** At present, the government has set the important task of increasing the permeability, i.e. the smooth transit from one sub-system to another and from VET to the higher education system, and realigning the VET system to a more demand and market-led system in order to raise the economic and social recognition of VET qualifications. Until now, there has been a lack of confidence in VET among enterprises and families. VET is not considered to provide the necessary skills for the economy, and culturally, it has not been regarded as an attractive educational option. The Government should take actions to stimulate the coordination between different VET suppliers, maintain and enhance the involvement of the private sector in identifying and defining the necessary skills and raise the overall profile of VET within society. The new strategic lines of actions of CONOCER could help align the VET supply to the private sector needs. In addition to this, in order to spur individuals to undertake qualifications in areas where the demand for skills may be bigger but the certifications hold a low parity of esteem, the transformation of the VET system should be complemented by targeted communication and information strategies. In this respect, there may be valuable lessons to be learnt from the Australian Communication Project (OECD, 2009) that (1) analyses people's knowledge, attitudes and career aspirations, (2) scans any available information on the topic, (3) researches how VET was reported in the media in the last year, (4) identifies key audiences and finally (5) designs and implements appropriate targeted communication strategies.
- **To maintain a close dialogue with all VET stakeholders.** The complexity of the multi-governance VET system in Mexico requires a close dialogue among different government institutions in order to agree, design and implement innovations affecting the whole VET system and therefore ensure a coherent and coordinated supply across the Federation. CONAEDU has recently proved an efficient mechanism to ensure a fluid dialogue between the Federal and State governments, and an important agreement to reform the General Baccalaureate has been achieved. This dialogue should be maintained and enhanced in order to ensure the needed commitment of all relevant governmental institutions responsible for VET. Moreover, as mentioned, within the structured sectors of the economy, a dialogue with significant parts of the sectors, e.g. hospitality sectors, automotive, concerning the alignment of the curriculum is in progress. This dialogue should be expanded to all sectors of the economy to obtain a holistic picture of the productive sector needs. Moreover, a further involvement and commitment of employers to contribute to the improvement of VET should be promoted and incentivised. This is particularly true in a context of economic slowdown and uncertainty. Finally, efforts should be made to ensure a closer dialogue and involvement of teachers, school leaders, trade unions, parents and students associations from the earlier stages of the innovation designs. This would be important in order to identify potential implementation problems, e.g. lack of available skills, infrastructures, etc, as well as to promote buy-in and reduce resistance to the required changes.
- **To continue strengthening the knowledge base at a system level.** Recently, an effort to collect more and better statistics has been recognised and as mentioned previously the results from the "ENLACE" test and the strategic plan of CONOCER, which envisages the creation of a database

with a large set of information, will help augment the until now relatively few statistics. This effort should be maintained by tracking the outcomes of participation in different training programmes. Accountability measures can offer pragmatic benefits with a formalised approach that can be discussed, challenged and communicated among all stakeholders. Lessons from other countries show that it is critical from the outset to determine what the information gathered by an accountability system will actually be used for. If used strategically, accountability measures can assist in aligning the multiple elements of a system in a purposeful and reflective manner. Equally, resources should be assigned for exploiting international knowledge sources linking industry knowledge, work processes and industry skill standards, as a kick-start to work across different sectors of the economy. Relevant knowledge sources could be the United States O\*NET database, the European Training Village sub-site on Early Identification of Skills needs, or the OECD. Finally, the system should strengthen those mechanisms capable of capturing and codifying critical knowledge process during each stage of a policy process.

- **To foster the incipient monitoring and evaluation culture to ensure a proper implementation of the innovation and feed the policy process.** There is a clear push towards monitoring and evaluation schemes of all public initiatives from the Secretary of Public Education. This impulse should be maintained and further fostered, and initial impact assessment exercises should be encouraged for future activities as these exercises may facilitate and inform the decision making and the mid-term and ex-post evaluations. The formal feedback loops into the system should be clearly designed and implemented as well in order to inform what works and what does not.
- **To introduce pilot case studies before implementing system-wide innovations.** Innovations that may have a wide impact across the VET system may require the running of pilot case studies to verify the expected results, re-design and adapt parts of the innovation, identify the resource needs, and in general, assess the feasibility of the innovation. Until now, there has not yet been a systemic use of pilots and formative evaluations which could form a valuable and dynamic knowledge base for all stakeholders involved in the alignment processes. With a view to sustainable policy making, strategic use of pilots combined with formative and participatory evaluations should be strongly encouraged.
- **To provide a framework to facilitate the scaling-up of innovation.** The local level can provide a laboratory for piloting opportunities, but in order to scale up these initiatives to the system, more intensive and developed practices regarding the use of formative evaluations and knowledge sharing should be put in place.
- **To ensure the financial resources required for implementing the innovations and avoid the innovation fatigue among stakeholders.** The design and implementation of system-wide innovations may require substantive financial resources in order to ensure a proper implementation and therefore yield the expected positive results. A careful analysis of the financial implications of the implementation of the innovations should be carried out before embarking in implementing them as a lack of resources may seriously hinder the chances of success of any innovation. Failed innovations (or those perceived as such) carry a high cost, not only in terms of the resources mobilised in the specific innovation, but more broadly in the perception and trust on the capacity of future actions, and creates a lack of confidence and engagement as well as innovation fatigue among stakeholders. This reinforces the importance of introducing pilots before introducing wide-coverage innovations in the system as they may reveal important information about the resource implications.

Many of these policy recommendations may require substantive time and resources to be applied and obtain significant impacts, and therefore a strong and long term shared vision and commitment across relevant stakeholders is crucial. Strong political will and leadership may be required to steer the innovation process, galvanise the different stakeholders around the innovations and act as an enabler to overcome some of the main barriers. Moreover, it is also important to bear in mind that the results of these policy recommendations may only yield the expected results if they are taken as a whole into a coherent framework as many of them may co-evolve, i.e. the activities and their results may be closely intertwined.

## **IMPLICATIONS FOR THE STUDY OF SYSTEMIC INNOVATION IN VET SYSTEMS**

The analysis of the two Mexican cases has added new evidence to the cross-country study of systemic innovation in VET and has revealed some important insights. More precisely, this section will analyse (a) the nature and scope of the innovations recently introduced in Mexico, (b) the role played by knowledge and empirical evidence throughout the process, (c) the involvement of stakeholders and (d) the drivers and enablers that have allowed the different innovations to accrue. This analysis will highlight the importance that contextual and historical factors embedded in the different VET systems may combine to explain the evidence gathered during the country visit to Mexico, especially when compared to other VET systems in other country visits of the study.

As mentioned in the introduction, the formal structuring of the VET system in Mexico is relatively new as it dates from 1976 with the creation of the National System of Technological Education (Sistema Nacional de Educación Tecnológica- SNET) and since then, it has not traditionally enjoyed a high status as students and enterprises have a preference towards academic-based qualification that are regarded as more prestigious and better suited for the labour market. As a result, the percentage of secondary students enrolled in VET programmes represents only 11% (UIS 2006). This situation clearly contrasts with the role and tradition that VET systems enjoy in other countries that have been analysed in this project such as Germany, Switzerland or Denmark and may account for a large share of the explanation of the differences in the nature and scope of the innovations recently introduced in Mexico as well as for the differences in the process used. The next paragraphs elaborate on these aspects.

In general, innovations with important system-wide effects in VET, and in Education more generally, tend to be scarce, where changes instead tend to be incremental. The reform of the Technical Baccalaureate, however, represented a substantial change in the organisation and curricula content of the technical training in Mexico with clear system-wide affects. This wide of a scope and impact of a reform has been relatively unusual in the innovations analysed in this project, with perhaps the exception of the Hungarian “National Vocational Qualification Register”. This finding suggests that relatively young and to some extent “in the making” VET systems can allow for the introduction of more radical types of innovations, for areas where changes with deeper effects can be envisaged and implemented. This is particularly true when compared to long-standing and well established VET systems, where innovations tend to be more incremental as changing tradition is often harder to achieve.

The introduction of these more radical innovations may also be driven by the shared sense of urgency to introduce changes in a system that is currently widely regarded as unable to respond to the changing economic and social needs of the country. The fall in competitiveness, the rapid technological change that the Mexican economy is currently undergoing and the forecasted demographic expansion are factors that put pressure on the current system and demand for more substantive changes in the educational system in general, and in VET in particular. Although these socio-economic factors are shared by almost all countries involved in the project, the sense of urgency in Mexico may be stronger than in the average country due to the speed in the dynamics of the economy and population.

The urge and scope of the envisaged change in the VET system may also play a role in the need and use of knowledge for deciding, designing and implementing the innovation. In this sense, the two selected case studies in Mexico illustrate the differences in the scope and impacts of the innovations and the requirements for knowledge and use of knowledge. The technical baccalaureate has system-wide impacts, while the alignment of the training supply to the demand has a more limited scale and localised effect in a particular region of the country for a particular sector. The need for more knowledge and evidence coming from statistics, research and international experiences is sharper in the reform of the technical baccalaureate, while the training supply changes in Playa del Carmen required, in a first stage, more concrete and localised information about industry needs.

Finally, building consensus and involving a set of relevant stakeholders tends to be the best strategy for promoting change in any complex system and when the effects are going to be deep and wide-spread. It generally allows for negotiating the nature and the scope of the change. It also helps to develop a feeling of buy-in among the different stakeholders that ensures a reduction of resistance in those agents affected by the change. This is particularly true in systems where the governance of VET and education more broadly, is complex and dependent on different jurisdictions. However, in the Mexican case, the BTe reform shows that although it is worth fighting for consensus building and wide involvement of stakeholders, this is not always necessary to initiate a systemic change. The strong leadership of the Secretary of Education allowed for designing and moving forward the reform, although it did not resolve the challenges in implementation that could have been foreseen and resolved if a wider involvement of stakeholders had been put in place.

The need for a strong leadership from the government is a common feature in many of the innovations analysed in this project. However, the capacity of the government to design and implement wide and deep change innovation in the VET system without, at the very least, a broad consultation and consensus among stakeholders may be a feature specific to countries with relatively young and/or under transformation systems, and where an urge for change is widely acknowledged. However, long-established and institutionalised tier-system VET systems count on a long-standing tradition of consensus building—a system which carries its own advantages and disadvantages in the process of innovation

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**ANNEX:  
AGENDA OF THE MEXICAN COUNTRY VISITS**

**Tuesday, November 11<sup>th</sup> 2008**

TIME	SUBJECT	INTERVIEWED PERSON
<i>9:20 - 10:00</i>	<i>Transportation from hotel to Convention Center</i>	
10:00 - 12:00	<b>Presentation of the case study I - Technical Upper Secondary Education Reform</b> <i>Place: Convention Center of Training for Work</i>	Daffny Rosado Sector Coordinator of Academic Development Rafael de Hoyos Coordinator of Advisers of the SEMS
12:00 - 13:30	<b>Presentation of the case study II - Riviera Maya</b> <i>Place: Convention Center of Training for Work</i>	Bernardo Cisneros General Director of Centers of Work Training Rafael de Hoyos Coordinator of Advisers of the SEMS
<i>13:30 - 14:30</i>	<i>Meal (Convention Center)</i>	
14:30 - 16:30	<b>Development of Vocational Training in Upper Secondary Education</b> <i>Place: Convention Center of Training for Work</i>	Margarita Amezcua Director of Innovation and Communication of the COSDAC
16:30 - 17:30	<b>Interview with the CECYTE's labor union</b> <i>Place: Convention Center of Training for Work</i>	Fernando Salazar Labor union representative of the CECYTE Durango
17:30 - 19:30	<b>Interview with entrepreneurs</b> <i>Place: Convention Center of Training for Work</i>	Carlos Noriega CONCAMIN and Entrepreneurial Coordinating Council
<i>19:30 - 20:00</i>	<i>Transportation from Convention Center to hotel</i>	

Wednesday, November 12th.

TIME	SUBJECT	INTERVIEWED PERSON
<b>8:00</b> - <b>9:00</b>	<b>Transportation from hotel to Convention Center</b>	
9:00 - 10:00	<b>Interview with a state official</b> <i>Place: Convention Center of Training for Work</i>	Gabriela Zapata General Director of Upper Secondary and Higher Education of the State Government of Yucatan
10:00 - 11:00	<b>Interview with a federal official</b> <i>Place: Convention Center of Training for Work</i>	Sergio García-Bullé General Director of CONOCER
11:00 - 12:00	<b>Interview with an expert</b> <i>Place: Convention Center of Training for Work</i>	Mary Cruz Moreno Universidad Autónoma del Estado de México  Luz María Solís ANUIES
12:00 - 13:00	<b>Interview with entrepreneurs</b> <i>Place: Convention Center of Training for Work</i>	Horacio Rodríguez Technical Secretary of the Education Commission of the Entrepreneurial Sector, Entrepreneurial Coordinating Council  María Fernanda Garza Deputy Chairwoman for Social Development, COPARMEX
<b>13:00</b> - <b>13:30</b>	<b>Transportation to Carlos Mancera's office</b>	
13:30 - 14:30	<b>Interview with a researcher</b> <i>Place: Av. México 45, piso 3, colonia Condesa (Parque México)</i>	Carlos Mancera VALORA
<b>14:30</b> - <b>16:30</b>	<b>Transportation to airport - meal and flight Mexico - Cancun</b>	

Thursday, November 13<sup>th</sup> 2008.

TIME	SUBJECT	INTERVIEWED PERSON
<b>8:20</b> - <b>9:00</b>	<b>Transportation to Cancun</b>	
9:00 - 11:00	<b>Visit to ICAT campus Playa del Carmen</b> <i>Place: Playa del Carmen</i>	Claudio Padilla Principal of ICAT, campus Playa del Carmen  Teachers and students
<b>11:00</b> - <b>11:30</b>	<b>Transportation to Puerto Morelos</b>	
11:30 - 15:30	<b>Visit to Touristic Workshop</b> <i>Place: Puerto Morelos</i>  <i>Interview</i>	Élida Villalobos Principal of ICAT, campus Cancun  Teachers and students Bernardo Cisneros General Director of Centers of Work Training
<b>15:00</b> - <b>16:00</b>	<b>Return to Playa del Carmen</b>	
16:00 - 17:00	<b>Visit to the Viva Wyndham Hotel</b> <i>Place: Playa del Carmen</i>	Francisco Flamenco Human Resources Manager  Nancy Rangel Human Resources Chief
<b>17:00</b> - <b>17:30</b>	<b>Meal</b>	
<b>17:30</b> - <b>18:00</b>	<b>Transportation</b>	
18:00 - 19:00	<b>Hotel Association</b> <i>Place: Playa del Carmen</i>	Alma Esteban López Human Resources Manager
<b>19:00</b> - <b>19:30</b>	<b>Return to hotel</b>	

Friday, November 14<sup>th</sup> 2008.

TIME	SUBJECT	INTERVIEWED PERSON
<b>8:00</b> - <b>9:00</b>	<i>Transportation to Tulum</i>	
9:00 - 12:00	<b>Visit to the CROC's labor union</b> <i>Place: Tulum</i>	Representative appointed
12:00 - 12:30	<b>Visit to Touristic Workshop</b> <i>Place: Tulum</i>	Jazmín Aguilar In charge of ICAT, campus Tulum  Teachers and students
<b>12:30</b> - <b>13:00</b>	<i>Transportation</i>	
13:00 - 15:00	<b>Visit to the Bahia Principe Hotel</b> <i>Place: Tulum</i>	Liliana Principal of ICAT, campus Playa del Carmen  Human Resources Manager or Chief of Training
<b>15:00</b> - <b>16:00</b>	<i>Meal</i>	
<b>16:00</b> - <b>17:00</b>	<i>Return to Playa del Carmen</i>	
17:00 - 17:50	<b>Visit to the Royal Porto Hotel</b> <i>Place: Playa del Carmen</i>	Jazmín Pech Human Resources Manager
<b>18:00</b> - <b>18:10</b>	<i>Return to hotel</i>	

Tuesday, November 18<sup>th</sup> 2008.

TIME	SUBJECT	INTERVIEWED PERSON
8:00 - 9:20	<i>Transportation from hotel to Convention Center</i>	
9:20 - 10:20	<b>Development of Vocational Training in training for work</b> <i>Place: Convention Center of Training for Work</i>	Genny Góngora Technical Director of the DGCFT
10:20 - 11:15	<b>Interview with an expert</b> <i>Place: Convention Center of Training for Work</i>	Consuelo Ricart Specialist in education and job market, IDB Mexico
11:15 - 12:00	<b>Interview with a federal official</b> <i>Place: Convention Center of Training for Work</i>	Violeta Figueroa Director of Curriculum Design - CONALEP  Fernando Sánchez Director of Academic Education - CONALEP
12:00 - 13:30	<b>Interview with a federal official</b> <i>Place: Convention Center of Training for Work</i>	Omar Rodríguez Labor Observer  Olivia Morales Labor Observer
13:30 - 15:30	<i>Meal and transportation to CETIS No. 30</i>	
15:30 - 19:00	<b>Visit to CETIS No. 30</b> <i>Place: Delegación Gustavo A. Madero, Distrito Federal. Calle Cienfuegos No. 1017, Col. San Pedro Zacatenco, C.P. 07370 (cerca de la estación de metro Indios Verdes).</i>  <i>Phone: 57520552 y 58862278</i>	José Alfonso Fragoso Principal  Teachers and students
19:00 - 19:40	<i>Transportation from CETIS to hotel</i>	

Wednesday, November 19<sup>th</sup> 2008.

TIME	SUBJECT	INTERVIEWED PERSON
9:00 - 10:00	<i>Transportation from hotel to Convention Center</i>	
10:00 - 12:00	<b>Closing session - Conclusions and recommendations</b> <i>Place: Convention Center of Training for Work</i>	Miguel Székely Undersecretary of Upper Secondary Education  Mr. Juan Manuel Martínez - Advisor of the Undersecretary of Upper Secondary Education, National Coordinator of VET Project

Tuesday, March 17<sup>th</sup> 2009.

TIME	SUBJECT	INTERVIEWED PERSON
9:30 - 10:00	<i>Transportation from hotel to SEP</i>	
10:00 - 13:00	<b>Presentation of the case study I - Upper Secondary Education Reform</b>  <i>Place: SEP Coro Alto</i>	<b>Dr. Miguel Székely Pardo</b> Undersecretary of Upper Secondary Education <b>Rafael de Hoyos</b> Coordinator of Advisers of the SEMS <b>Daffny Rosado</b> Sector Coordinator of Academic Development
13:00 - 14:00	<b>Interview with Universities Association. (Asociación Nacional de Universidades e Instituciones de Educación Superior)</b> <i>Place: SEP Coro Alto</i>	<b>Luz María Solís</b> ANUIES
14:00 - 15:00	<i>Meal</i>	
16:30 - 20:00	<b>Visit to school</b> <i>Place: PLANTEL : CETIS 32</i> <i>TITULAR: Ing. Dileita Gómez Tamez</i> <i>UBICACIÓN: C/ Ancha Lecho Rio Churubusco S/N Col. Adolfo López Mateos. Del. Venustiano Carranza</i> <i>Tel. 55 58 40 04</i>	Principal, students, parents and teachers.
20:00 - 20:30	<i>Transportation from SEP to hotel</i>	

Wednesday, March 18<sup>th</sup> 2009.

TIME	SUBJECT	INTERVIEWED PERSON
<b>8:00</b> - <b>9:00</b>	<i>Transportation from hotel to SEP</i>	
9:00 - 9:45	<b>Interview with entrepreneurs</b> <i>Place: SEP Coro Alto</i>	<b>María Fernanda Garza</b> Deputy Chairwoman for Social Development, COPARMEX
9:45 - 10:30	<b>Interview with a federal official</b> <i>Place: SEP Coro Alto</i>	<b>Sergio García-Bullé</b> General Director of CONOCER
10:30 - 11:15	<b>Interview with Universidad Pedagógica Nacional (UPN)</b> <i>Place: SEP Coro Alto</i>	<b>Patricia Pernas</b> Regional Director UPN
11:15 - 12:30	<b>Interview with entrepreneurs</b> <i>Place: SEP Coro Alto</i>	<b>Horacio Rodríguez</b> CONOCER <b>Carlos Noriega</b> CONCAMIN and Entrepreneurial Coordinating Council
12:30 - 13:30	<b>Interview with the Secretary of Education (Nayarit)</b> <i>Place: SEP Coro Alto</i>	<b>Lic. Raúl Pérez González</b> Secretary of Education (Nayarit)
13:30 - 14:30	<b>Interview with Labor Ministry</b> <i>Place: SEP Coro Alto</i>	<b>Omar Rodríguez</b> Labor Observer
<b>14:30</b> - <b>15:30</b>	<i>Meal</i>	
16:00 - 17:00	<b>Closing session - Conclusions and recommendations</b> <i>Place: CONOCER</i>	<b>Dr. Miguel Székely Pardo</b> Undersecretary of Upper Secondary Education
<b>17:00</b> -	<i>Transportation to hotel and/or airport</i>	

## ACRONYMS

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CBTA	Centro de Bachillerato Tecnológico Agropecuario
CECYTE	Colegio de Estudios Científicos y Tecnológicos del Estado
CETIS	Centro de Estudios Tecnológicos Industriales y de Servicios
CINVESTAV	Centro de Investigación y de Estudios Avanzados
CONOCER	Consejo Nacional de Normalización y Certificación de Competencias Laborales
COPARMEX	Confederación Patronal de la República Mexicana
COSDAC	Coordinación Sectorial de Desarrollo Académico
CROC	Confederación Revolucionaria de Obreros y Campesinos
DGCFT	Dirección General de Centros de Formación para el Trabajo
ICAT	Instituto de Capacitación para el Trabajo
IPN	Instituto Politécnico Nacional
SEMS	Subsecretaría de Educación Media Superior
UNAM	Universidad Nacional Autónoma de México
UPN	Universidad Pedagógica Nacional