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Third session
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Report of the Multi-year Expert Meeting on Enterprise Development Policies and Capacity-building in Science, Technology and Innovation (STI) on its third session

Held at the Palais des Nations, Geneva, from 19 to 21 January 2011

I. Chair's summary

1. The opening session of the third Multi-Year Expert Meeting on Enterprise Development Policies and Capacity-building in Science, Technology and Innovation (STI) opened with presentations that highlighted some fundamental considerations related to entrepreneurship and science, technology and innovation (STI) policies, more specifically to the role of educational and research institutions. The multi-year expert meeting was chaired by Mr. Mothae Anthony Maruping, Ambassador of Lesotho, who argued that entrepreneurship education and innovation were key in promoting private sector development, especially in least developed countries (LDCs), thus allowing the private sector to become a worthy development partner. He reminded participants of the importance of the conclusions of the meeting to the upcoming Fourth United Nations Conference on the Least Developed Countries (LDC-IV) and suggested that the proceedings be one of the building blocks of the outcome document, to be presented in Istanbul in May 2011.

2. In his opening remarks, Mr. Petko Draganov, the Deputy Secretary-General of UNCTAD, indicated that the emphasis on entrepreneurship education and innovation policies could not be timelier, considering that, in the post-crisis scenario, a dynamic, job-creating and innovative productive sector was vital to accelerate the first signs of economic recovery. In particular, the role of entrepreneurship education was central in encouraging more people to consider entrepreneurship as an option and moving into the nascent stage of starting a business. Therefore, entrepreneurship education was central in the attainment and sustainability of the Millennium Development Goals (MDGs), in particular MDG 1 (the eradication of extreme poverty and hunger) and MDG 8 (the development of a global partnership for development). He also stressed that STI should be a major driver of a

structural transformation of developing economies that emphasized strong growth supported by low-carbon productive capacities. However, developing countries faced serious gaps in their capacity to access and use knowledge and technologies. It was crucial to promote the development of STI capabilities. To this end, educational and public research institutions should receive particular attention as they were central elements of the national innovation system.

3. The Directors of the Division on Investment and Enterprise and the Division on Technology and Logistic of UNCTAD presented the issues note TD/B/C.II/MEM.1/9 – “Entrepreneurship education, innovation and capacity-building in developing countries” – and stressed the importance of the entrepreneurship policy toolkit to introduce practical guidance on private sector development. The key message on entrepreneurship education had been to foster policy coordination, creating the linkages with the private sector in education and training at the country and global level. In addition, some delegations suggested that UNCTAD should encourage the support for research and development (R&D) of universities and research institutions, support the teaching of entrepreneurship, and STI in all education levels, and encourage in particular the participation of women. UNCTAD should also encourage the transfer and application of technology and knowledge from academia to the business productive sectors.

4. The representative from the United Republic of Tanzania noted that, in order to overcome a series of complex challenges related to major trade imbalances, least developed countries (LDCs) should learn to compete based on quality and not on price, should pursue a deeper regional integration process and go beyond borders (e.g. within the East African Community) to achieve better economies of scale. They should also create a better environment for foreign investment and build the local productive capacity required to optimize the use of local resources. In this respect, he urged mechanisms such as the Enhanced Integrated Framework and Aid for Trade housed under WTO to deal more consistently with supply-side capacity and production constraints, and help LDCs in bridging their gap in human resource development in order to take the leadership of economic transformations through attitudinal changes. In the United Republic of Tanzania, for example, UNCTAD’s Empretec programme, through its support of small and medium-sized enterprises (SMEs), had become a paramount element in the entrepreneurship ecosystem, and it had promoted the development of entrepreneurial behaviours in entrepreneurs, allowing them to increase the productivity of their enterprises, increase employment and facilitate business linkages with large enterprises

5. The representative of Ecuador also expressed appreciation for UNCTAD’s support in fostering entrepreneurship training among marginalized sectors of the economy through its Empretec programme. The representative of Honduras requested UNCTAD to assist the country in its efforts to adopt a more comprehensive approach to trade and development issues, which would also include entrepreneurship and SME capacity-building through the installation of the Empretec programme. The representative of Peru highlighted the importance of programmes such as Empretec and Linkages, for promoting a better integration of SMEs in the productive and exporting chains, considering that SMEs have a high concentration of employment in Peru; and therefore requested donors to keep their financial support to them. The representative from Viet Nam acknowledged the success of the Empretec programme in increasing the entrepreneurial skills of handicraft companies in the northern provinces and requested UNCTAD to expand the programme at the national level.

6. It was further emphasized that the collaboration between educational and research institutions and the productive sector had a strong influence on the functioning of a national system of innovation. Policy should support a better reflection of the technological and human capital requirements of firms both in university curricula and in decisions regarding

research agendas. Facilitating technology transfer in general was a critical policy factor and demanded the consideration of such issues as the need for technological proximity between firms and academia, intellectual property rights and the use of open access models. This was highlighted against the background of a general shifting of the R&D geography, increasing North–South and South–South partnerships and a need for a diversity of policy approaches.

7. One expert addressed the gender dimension of capacity-building in STI. While women had made great gains in higher education, there were still far fewer female researchers than graduates. Sectoral segregation with a negative bias towards women in industrial technologies was present. In promoting gender equality in STI, a number of approaches were cited to promote equality but also to make more efficient use of existing human capital. At the higher policy level, an important issue was that funding committees for research were male-dominated. A solution could be to improve gender balance both among applicants and among “gatekeepers” in the STI activities (financing, editorial and conference boards and decision-makers). The key policy issues remained how to attract sufficient numbers of women as STI students and researchers, and to ensure gender balance in later career and professional paths and activities. Systematic and long-term policies were needed, supported by regular national statistics that provided feedback on policy outcomes. However, the delegation of the Philippines noted the extraordinary progress made in the country in achieving gender parity at the Government level, even citing the case of women’s predominance on the Ministry of Trade and Industry. Similarly, in the private sector, women entrepreneurs comprised up to 80 per cent of the total SMEs. However, the share of SMEs in the total GDP of many developing countries remained much below that of developed countries.

8. The first session addressed the issue of building domestic science, technology and innovation capacity in developing countries. It was stressed that challenges of economic development were not going to be addressed properly until such capacity became an instrument for supporting every country’s strategy to stimulate economic growth, raise productivity, wealth, and standards of living.

9. Experts shared views and discussed examples of how the development of indigenous technological capabilities could benefit from approaches based on international collaboration and the use of open technologies by universities and research centres. An expert explained that systematic North–South cooperation was a relatively recent development. A frequent feature of successful STI cooperation activities was the existence of high-level policy support through an explicit internationalization strategy for educational and research institutions, which enabled a release of international innovation potential. A long-term internationalization policy could intensify North–South cooperation. Examples were presented of how collaboration with developed-country educational institutions could help developing STI capacities in developing countries. Such North–South policy actions needed to be grounded on a realistic assessment of the present capacities and be formulated within the framework of national development priorities. Building awareness was important as many activities did not reach the attention of policymakers or the target population, and thus possibilities for coordination and synergies were underutilized.

10. The role of new technologies, particularly of open technologies, was addressed by another expert. Information and communications technologies (ICTs) were providing new opportunities for the training of scientists and engineers. Examples were presented of international scientific institutions which were using open source information technologies to increase their outreach while addressing shortfalls in ICT skills and competencies. Electronic journal delivery was another area of activity. It required the good cooperation of publishers as well as overcoming bandwidth problems by using a Web-to-e-mail model, whereby content was selected on the World Wide Web but delivered by e-mail. Open

access scientific journals and streams of scientific lectures had been developed and delivered with open source technologies and these had matured into mainstream technologies. Finally, recognizing the fact that mobile communications were the dominant form of ICTs in developing countries, it was important that efforts were made to develop scientific applications based on mobile technology, some of which were cited by the expert.

11. Climate change technologies were presented by an expert as a case in which building indigenous scientific and technological capabilities was necessary in order to address a major concern of developing countries. It was suggested that, as far as climate change technologies were concerned, technology transfer was not working for many developing countries. Recently there was momentum building around the idea of low-carbon innovation centres. The missing link was often the lack of knowledge and expertise in order to absorb technology. In order to achieve this, it was important to have strong support for the development of indigenous capacities, preferably within the context of a national innovation system strategy. An important reason was that many low-carbon technologies needed local adaptation and implementation specific to regional conditions. Some experiences suggested that intellectual property was not always at issue, as often firms in developing countries did not need to innovate at the cutting edge of technology in order to be competitive. Local and tailored solutions were preferred and good policy advice was to avoid one-size-fits-all approaches.

12. The second session discussed the question of how academia and firms could cooperate in the strengthening of STI capabilities. The discussion suggested that the three pillars of successful academic firm cooperation were committed academia, funding and entrepreneurship. The legal status of the institution was important and needed to have effective management and capacity to match private sectors in negotiation and contracting. Experts underlined that an important step was enabling publicly funded research institutes to adopt a flexible policy regarding intellectual property, as this was a usual issue of concern for firms when exploring possibilities with academic institutions. Further enabling cooperation was the on-campus presence of business and proximity between them and R&D labs. Encouraging trans-disciplinary research was also necessary.

13. A legal framework that allowed some mobility of researchers between academia and firms facilitated interaction with businesses and improved the overall development relevance of STI. A “conflict of interest” policy for researchers involved in start-ups or other forms of interaction with business was considered necessary, as such conflicts could not be avoided but could be managed. It was also important that business development teams included a diversity of expertise and knowledge from different fields. In addition, it was suggested that technologies from the firms that were set to commercialize the research outcome should be an active part of the research team. In building their capacity to provide these services, and in general to interact with business, universities and public research institutions needed to prioritize the acquisition of a diverse experience in technology, product development and entrepreneurship.

14. The discussion noted that the main challenge in early stages of a transfer of technology project was getting the right team together to bring the technology or business idea to fruition. A second important step was to establish absolute clarity about the intellectual property outcomes and to develop per-revenue funding. Experts continued to question experiences in success rates of start-ups as well as success of acquiring financial support. It was suggested that financing terms and conditions in incubators were expected to be as convenient as those in pure academia, but were shorter in term and closer to what was expected in business. It was suggested that this could be matched with training in entrepreneurship and also in innovation management.

15. Another success factor was the existence of an entrepreneurial culture in academia; the experiences of experts were very different in this regard. However, an important

opportunity for academia was to act as an intermediary between large businesses and start-ups and SMEs and, in this regard, the reputation of the academic institution facilitated the attraction of companies wanting to invest in start-ups.

16. Experts discussed the success rate of blue sky research as opposed to targeted joint collaborative efforts. It was difficult to estimate the ultimate success of collaborations as there were few indicators beyond patent filing. However, if companies came back for continued research cooperation, this was a good indicator. Regarding non-commissioned research, the outcome depended as well on the scientific goals of the researchers, and many had publishing as a first and primary target.

17. Experts shared similar experiences in business incubation, while the autonomy of the actual incubator, relative to the university, varied. Regardless of the level of independence, what was important was that entrepreneurs had an identifiable locus within which they could interact effectively and efficiently, and university administrations were not always well equipped for this. A related institution, such as a foundation, formally related to the university but with greater flexibility in interaction, was one possibility. Experts asserted that the long-term proposition was in convincing firms that they had an advantage in cooperating with universities, in particular in developing countries where there was a need to establish new businesses.

18. Linkages among research institutes were important from the point of view of effective access for SMEs. Often, small firms were confronted with a lack of information or guidance as to who could cooperate on R&D; alliances among academic and research institutions were able to greatly facilitate finding partnering institutions. While technology transfer had its institutional aspects, experts deemed that often it was a people and networking issue and thus facilitating exchange of information, in particular through the use of ICTs, was fundamentally important.

19. Some experts raised the issue of the support that universities and research centres could provide to low-tech or non-academic innovators, or grassroots innovation initiatives. It was agreed that incubators did not need to be, by definition, closed to non-academics. This was particularly important for innovation in a developing-country context and beyond cutting edge technology fields. Government policy was very important for protecting bottom-of-the-pyramid innovators and it needed to provide institutional support. In the discussion, many delegations (e.g. Brazil, Ecuador, Libyan Arab Jamahiriya and Nigeria) made enquiries on the technical assistance offered by the SR/EPFL of Switzerland and by the Ludwig-Maximilian University Centre.

20. The third session focused on the area of entrepreneurship policies. The UNCTAD secretariat illustrated its experience in entrepreneurship capacity-building delivered through the Empretec programme, which was being implemented in 32 countries in Africa, Latin America, the Middle East and transition economies. The entrepreneurship toolkit for policymakers that was being developed by the UNCTAD secretariat was also introduced, based on a comprehensive entrepreneurship policy framework that included six priority areas with a direct impact on entrepreneurial activity: (a) general entrepreneurship policy; (b) awareness and network building; (c) access to finance; (d) entrepreneurship education and skills; (e) innovation and technology upgrading; and (f) the regulatory environment.

21. The toolkit consisted of four elements for each of the six areas and included:

- (a) The identification of main policy sub-areas and approaches;
- (b) Practical step-by-step guidelines for policy implementation;
- (c) An on-line inventory of good practice entrepreneurship policies and programmes for easy reference; and

(d) A set of indicators for monitoring and evaluation.

22. At the meeting, a detailed presentation of the toolkit for policymakers applied to the area of entrepreneurship education and skills was delivered. Experts were invited to provide feedback on each of the four elements. It was pointed out that, for governments to be able to promote entrepreneurship education, commitment at the highest political level was required. This included a national policy on entrepreneurship education and including entrepreneurship education in other national policies, thereby providing an important signalling function. Further, political commitment was required to provide a broad-ranging framework and strategy, as opposed to having many isolated initiatives or programmes.

23. Emphasis was put on not only embedding entrepreneurship education at the national policy level, but also at the regional and local level, and ensuring coordination between them. An expert from Barcelona Activa provided the example of a policy commitment for entrepreneurship education at the local city level. Further, reference was made to the importance of cross-country policy initiatives in the field, such as the European Union's 2020 Strategy, which included entrepreneurship as part of its aim to enhance competitiveness and generate growth and jobs in the region. Special attention was to be devoted to women, in order to enhance their contribution to economy recovery and growth.

24. At the national level, since entrepreneurship education cut across so many different areas, it should be addressed by different ministries, not just the ministry of education, but also the ministries of economics and enterprise development. Other relevant ministries with which synergies should be encouraged were the ministries of innovation and employment. Potentially, all ministries should be involved, as an entrepreneurial mindset applied across all disciplines. It was noted that the involvement of the ministry of finance tended to be overlooked, despite the fact that it was where entrepreneurship education policy initiatives were often blocked. It was crucial to get the finance ministry on board early on in the process to ensure support and adequate public funding for entrepreneurship education.

25. Experts highlighted that, while government commitment was crucial, entrepreneurship education could not be effectively promoted by the public sector alone. The involvement of all of the various stakeholders that existed within an entrepreneurship education ecosystem was essential. This included the private sector, civil society, non-governmental organizations and academia. One expert commented that this was critical because, although governments may change every couple of years, the private sector and civil society remained. It was therefore important to include them in the process of promoting entrepreneurship education early on. In this line, an expert from Singapore's successful SPRING initiative explained the power of public-private partnerships in achieving tangible impact and sustainable results in the field of entrepreneurship education. He provided an example of how the private sector could contribute to the evaluation and development of pro-enterprise government regulation, by performing a regular evaluation ranking of how pro-enterprise different government agencies were. In addition, he provided an overview of the Action Community for Entrepreneurship (ACE), a private and public sector movement aimed at creating a more entrepreneurial Singapore.

26. An expert noted an international policy which resulted in an enterprise development grant from KFW Germany to an Asian country on the supply side of financing. This involved Risk Management in financing SMEs. Delegations further emphasized the importance of public-private sector partnerships, noting that, while the political commitment and will to promote entrepreneurship education at the national level may exist, governments in developing countries often lacked the technical skills and know-how to develop and implement a strategy. He argued that there was a need to give developing country governments more access to information about institutions and international organizations working in the field and of replicable projects and initiatives.

27. The fourth interactive session focused on innovative entrepreneurship education methodologies. During the discussion, four key messages were highlighted by experts. The first pertained to the link between entrepreneurship education and national economic and social objectives. It was emphasized that entrepreneurship education should be embedded as part of the economic development and poverty reduction strategies of developing countries. Secondly, the importance of adopting a life-long learning approach to entrepreneurship education was noted. Thirdly, governments were encouraged to pay particular attention to providing access to entrepreneurship education to both the formal and the informal sector. Fourthly, the lack of robust and reliable assessment strategies is one of the key barriers to embedding enterprise and entrepreneurship into mainstream education, as is the lack of grading criteria that can be used for quality control purposes during new course development.

28. It was also highlighted that, just as entrepreneurship education needed to be tailored to the different educational levels – primary, secondary and tertiary – so should it be tailored to different cultural and social contexts. Promoting local role models was important, as was developing local training material. It was unanimously agreed that there was no “one-size-fits-all” approach to entrepreneurship education. It was underlined that youth formed a bulge in the populations of developing countries, but labour market entrants were far above available job openings. Therefore, experts emphasized the importance of entrepreneurship education to widen their career options, and mentioned several existing approaches tailored to youth. For example, the International Labour Organization’s Know About Business training programme developed entrepreneurship curricula targeted at youth and aimed at creating awareness about the option of entrepreneurship as a career option for young people. The importance of reaching out with entrepreneurship education to women, rural communities and the informal sector was also emphasized.

29. The question of measuring the impact of entrepreneurship education and identifying indicators was also discussed at length. It was argued that it was important not to limit the process to indicators for which data currently existed, but to identify those which were relevant and needed, despite not yet having any available data. Experts differentiated between input, output, outcome and impact indicators, the last encompassing socio-economic impact indicators such as employment generation, and reduction in poverty, among others. Experts noted the relevance of process indicators, which were able to measure where governments situated themselves in the process of promoting entrepreneurship education. One expert raised the issue of the importance of obtaining more commitment by governments to collect data and conduct surveys, particularly in developing countries.

30. Experts explained that entrepreneurship education should go beyond the transfer of knowledge and the teaching of hard technical and management skills. Rather, the aim of entrepreneurship education should be to develop entrepreneurial individuals. An expert from Spain discussed the following points:

- (a) MBAs should provide students with hands-on entrepreneurial experience to build high-growth firms;
- (b) Cutting-edge research was needed for high-growth firms;
- (c) Developing Europe-centric entrepreneurship materials and databases on high-growth firms was important.

31. A delegation pointed out the importance of including humanistic courses in the undergraduate programmes, and to build cultural development, core values and full immersion programmes in underprivileged areas.

32. It was highlighted that, although not everyone was born to be an entrepreneur, entrepreneurship education had the potential to benefit all and should be directed to all. A representative expert from the European Commission noted that developing an entrepreneurial mindset contributed to the well-being of individuals in both their private and professional lives – whether they raised a family at home, pursued a career as an employee in a company or started their own business. Accordingly, the issue of appropriate methodologies for entrepreneurship education featured prominently throughout the meeting. One expert summarized the issue as the need of education “for”, rather than “about” entrepreneurship – integrating the acquisition of entrepreneurial competencies and “soft skills” such as creativity, initiative and persuasion in the curriculum across all ages and subjects, rather than teaching entrepreneurship as a separate subject. This often implied a shift from a traditional emphasis in many education systems on evaluating the ideas of others to generating ideas oneself.

33. Emphasis was put on entrepreneurship education as a lifelong process, beginning at a very early age. Experts noted that policymakers typically had a much greater direct command over curricula at the primary and secondary levels and that developing country enrolment rates were substantially higher for the former than at the tertiary level. Attention was also drawn to entrepreneurship education in crafts and vocational training, such as apprenticeships, as a central route for poverty alleviation and transforming “necessity” into “opportunity” entrepreneurs in many developing countries.

34. Experts highlighted the important link between the policy area of entrepreneurship education and skills and that of awareness, network-building and fostering a culture of entrepreneurship. The cultural image of entrepreneurship and entrepreneurs was constructed at a very early age and there was a consensus on the need to raise awareness about entrepreneurship as a rewarding and contemporary career choice, especially given the young demographic profile of many newly emerging markets. One expert noted, for example, that in the context of many developing countries this might mean inspiring young people in rural areas to see the untapped business opportunities “all around them”, rather than simply aspiring to migrate to a big city. It was also mentioned that – by sparking interest and passion for learning in students – entrepreneurship education contributed to reducing school drop-out rates. One expert highlighted the need to as well raise the awareness of parents about entrepreneurship as a fruitful and legitimate career choice for their children.

35. The importance of interaction of learners of all ages and educational backgrounds with real-life entrepreneurs was underlined. Rather than listening to celebrity entrepreneurs, peers and local exemplars that learners can more strongly relate to – and who talked openly and honestly about their successes and failures – may often be the most inspiring. It was noted that such interaction should be facilitated and moderated by an appropriately trained classroom instructor, to enable structured and systematic learning. Two aspects of entrepreneurship education were identified: (a) “teaching the teachers”; and (b) bringing entrepreneurs into the classroom and taking the students outside of the classroom. A mix of both models was generally needed for effective entrepreneurship teaching. The example of the Lagos Business School–Pan African University shed light on the selection of 100 innovative ideas that transformed into 10 plans to market and the selection of 50 high potential entrepreneurs for further incubation, with the support of the Federal Government of Nigeria.

36. Indeed, a dominant theme of discussion was the importance of appropriate training-of-trainers for entrepreneurship education at all levels, which was identified as a major challenge in both developed and developing countries, particularly with regard to the resource constraints of the latter. Teachers in traditional education systems should not automatically be considered apt to be “entrepreneurship teachers”. Teachers at all levels of

the education system required training. However, at the university level entrepreneurship professor were only evaluated for their research capacities, and not for being good educators, so there is no real career path for entrepreneurship teachers.

37. Effective entrepreneurship education involved innovative and experiential teaching approaches and “learning by doing.” For developing countries, especially, the vital importance of reaching out to non-tertiary (i.e. primary and secondary level) school teachers was emphasized. The example of an integrated primary and secondary school in Uganda was mentioned, which introduced a savings-and-loan society for additional income-generation activities by her teaching staff, thereby encouraging teachers themselves to think and act entrepreneurially. Experts made reference to the success of experiential entrepreneurship programmes in developing countries – such as UNCTAD’s Empretec training programme – and recommended that such programmes be embedded as part of official national education curricula. In addition, the need was highlighted to also make provision for reaching out to the informal sector, especially in developing countries.

38. Several experts emphasized the importance of mentorship schemes for entrepreneurship education. The example of Microsoft showed that, in partnership with various stakeholders, the programme empowered educators, inspired young innovators and enabled the ecosystem. The issue of balancing the quality and scalability of entrepreneurship education mentorship schemes was highlighted, especially in resource-constrained developing countries. It was noted that such schemes could take on a variety of guises such as North–South (linking experienced mentors from the North to young entrepreneurs in developing countries) and South–South (building local mentoring capacity and motivation) mentoring relations, as well as a role for return–migrant entrepreneur–mentors, and Diaspora entrepreneurs, bringing with them fresh insights and approaches.

39. The role of new ICTs in facilitating the scalability of entrepreneurship education and mentoring initiatives was extensively discussed, especially with regard to non-traditional and poor target groups in developing countries. One expert specifically underlined the vast potential of mobile phone technology in this regard. Experts debated several possible approaches – from traditional face-to-face teaching to pure e-learning – and a consensus emerged on the vast potential of “blended learning” approaches combining face-to-face instruction with on-line learning. Several experts suggested innovative approaches to address the financial viability of face-to-face instruction under such schemes. For example, partnering with local financial institutions for the delivery of face-to-face trainings – by improving clients’ risk profiles – produced a win-win situation. One expert introduced the “paying it forward” concept as an innovative solution to these issues. Under this approach, successful entrepreneurs – having themselves profited from mentorship services in the past – would “pay” for these services by committing themselves to each in turn mentoring several further prospective beneficiaries, producing a multiplier effect by harnessing tacit knowledge and underutilised skills and time in a cost-efficient manner.

40. Several experts supported the idea of start-up grants given directly by educational institutions – possibly in partnership with the private sector and other actors – to student-incubated businesses. For example, Singapore Management University’s “Technopreneurship” programme awarded such grants for a substantial amount of funding in collaboration with the country’s SME promotion agency. Given high youth unemployment rates, one expert emphasized the potential of even very modest start-up grants at the secondary school level in developing countries, whereby students may already begin to work towards a self-determined future.

41. Several experts noted the importance of an appropriate entrepreneurship education “ecosystem”, such as strategic partnership between the private sector, schools and government, without which no innovative entrepreneurial learning would be possible. A representative of a student-run entrepreneurship support organization emphasized the

importance of student clubs and societies and of developing a systematic mechanism whereby young entrepreneurs might make their voice, support needs and concerns heard directly with policymakers and teachers.

42. Session five focused on the role of the private sector, public–private partnerships and foundations in fostering entrepreneurial education. It was observed that one of the key success factors for entrepreneurship education was effective engagement of the private sector in facilitating entrepreneurship, including business and private educational institutions. Experts highlighted the existence of a wide range of corporate social responsibility initiatives in this area. For example, initiatives such as the “Employability Programs for Students” of Microsoft and “LiveWIRE” of Shell supported the development of a new generation of entrepreneurs and innovators through business and technical training. The issue of developing networks across sectors to spur partnerships, encouraging cross-border collaborations between professors, teachers and practitioners, was raised by some experts. The Micro Enterprise Acceleration Institute fully funded by HP provided an example of ICT programmes and serious games offered for young potential and established entrepreneurs. Shell LiveWire of the United Kingdom also explained how its programme supported youth development on how to start a business with a clear career direction in countries such as Saudi Arabia, Indonesia and the United Kingdom.

43. Experts discussed the importance of entrepreneurship education and training as key elements in any entrepreneurship policy framework, recognizing the need for entrepreneurs to develop the necessary behavioural competencies and technical skills to start and sustain a growing business.

44. During the session, experts shared the importance of international initiatives such as Endeavor and the Global Entrepreneurship Week in raising awareness on the importance of entrepreneurship among young people. Experts also highlighted the role of think tanks such as the World Entrepreneurship Forum as mechanisms that brought together the public, the private and the academic sectors to influence public policies for entrepreneurship development. The example of the White Paper on Entrepreneurship policies, prepared by the World Entrepreneurship Forum of EMLyon, was referred to as a useful tool to disseminate best practices and to promote networks among policymakers.

45. It was noted and recognized the role played by Foundations in promoting entrepreneurship by facilitating sharing of good practices, building and strengthening faculty networks and collaboration, encouraging interaction between academics teaching entrepreneurship and real-world entrepreneurs and practitioners. For instance, the European Foundation for Entrepreneurship Research (EFER) had developed a Pan-European network of business and technical professors, therefore fostering the collaboration and exchange cross-borders. EFER identified the following new research areas: the identification of international growth companies from Central and Eastern Europe, the call for nominations from EFER alumni, case studies development, the invitation of selected entrepreneurs for the European Entrepreneurship Colloquium 2011, and the publication of the research. Practical examples of public–private partnerships underscored the importance of bringing together local, national and international actors to share innovative thinking and engage in a constructive dialogue related to entrepreneurship and education.

46. Experts referred to several examples of how private sector-sponsored entrepreneurship centres could serve as hubs or coordinate activities across institutions, and build relationships between academia, alumni and entrepreneurs – working with both business schools and technical universities. They could also contribute to build networks of entrepreneurship professors/teachers and practitioners on a cross-border, cross-institution basis, encouraging cross-border collaboration. Finally, they could provide exposure of real-world business experiences and challenges of entrepreneurs, investors and how this could integrate and interact in classroom teaching.

47. It was observed that many of the current public-private partnership initiatives focused on supporting start-up companies; the need for start-up financing was unanimously acknowledged. However, there was also a need to support more established companies to grow. In that sense, the role of infrastructure, access to Internet and ICTs was pointed out, as in some regions poor e-connections hampered development of competitive enterprises.

48. Experts highlighted the role of the Empretec programme in assisting both new players and mature entrepreneurs through its 32 Empretec Centres worldwide. In the informal sessions, some delegations also reiterated their interest in the Empretec programme as part of their country efforts to promote entrepreneurship and enterprise development.

Key points of the discussion

49. During the discussions, several common constraints related to educational and research institutions were noted that affected developing countries' ability to harness STI in capacity-building. One was the lack of national strategies on capacity-building in STI tailored to country circumstances, which led to weak educational infrastructure, poor performance of education systems in building STI capacity and weak linkages among academia, research institutes and the private sector. Other constraints included (a) inadequate intellectual property policies and the absence of dedicated technology transfer offices and of staff with relevant skills and experience; (b) a lack of entrepreneurial culture among researchers; (c) a lack of incentives to undertake joint research projects at the international level; (d) difficulties with technology diffusion; (e) shortages of qualified R&D resources and difficulties in retaining qualified people; (f) a lack of understanding of the importance of STI for development and the marginalization of STI in national development agenda of less developed countries; and (g) weaknesses in the technological capabilities of firms and in STI-related infrastructure.

50. Experts underlined the need to develop strong innovative capabilities in combination with strong scientific and technological absorptive capabilities. Upgrading scientific and technological knowledge in developing countries would enhance their capacity to innovate and thus improve productive capacity, create employment and reduce poverty. In this regard, it was agreed that, in many cases, innovation would not necessarily take place at the frontier of technological or scientific knowledge: innovating by adopting and adapting existing technologies could be a powerful way for creative firms to develop successful businesses.

51. Experts shared the view that STI policy should support the alignment of the STI competencies supplied by the academic sector with the demands of the productive sector. Policy should provide incentives for educational and research institutions to develop agendas that matched more closely the requirements of domestic enterprises and local communities. In that regard, it was necessary to ensure that STI policy considered educational and research institutions as central elements of a national system of innovation (NSI) within which strong collaborative linkages should be established between academia and enterprises. The critical importance of building a strong NSI was noted, but experts agreed that in most developing countries the system of innovation was weak and fragmented. Experts encouraged UNCTAD to continue to support developing countries in this policy area, including through research and analysis, the implementation of national STI Policy Reviews and other technical assistance, particularly in the area of capacity building in STI.

52. The importance for STI capacity-building and the strengthening of collaboration between universities and research centres was underlined. Based on examples presented at the meeting, experts considered that open approaches to technologies, particularly new

information and communication technologies, offered a significant potential for facilitating such collaboration. Training scientists and engineers in key areas of interest for the technological upgrading of developing countries should be a major focus of such collaboration. Establishing and reinforcing networks of centres of scientific and technological excellence willing to engage in such efforts can greatly contribute to increasing the outreach and effectiveness of STI capacity building and UNCTAD was encouraged to continue its work in this field.

53. On the topic of entrepreneurship education, experts highlighted the crucial role played by education policies in order to bring about the potential contribution of entrepreneurship to social and economic development, a role that should be therefore reflected in a country's national economic and social development strategy. They also stressed the crucial role of government in creating the proper regulatory framework and incentives to catalyse the involvement of the private sector, education institutions, and individuals within an entrepreneurial ecosystem. In that context, the need for coordination on entrepreneurship education policy between institutions within a country was highlighted. In particular, experts emphasized that:

(a) It was of vital importance that entrepreneurship education be embedded into the formal educational system at all levels. This required a strong commitment from the government in terms of policy and resources;

(b) Curricula needed to be tailored to the local environment, with local materials and examples of role models that entrepreneurs could relate to. Programmes also needed to be developed across disciplines, not only economics, as entrepreneurship could be in any discipline or sector;

(c) Teacher development required interactive, experiential learning methods (detached from the old lecture methods) and closely linked with practice;

(d) Effective engagement of the private sector was needed in facilitating entrepreneurship, with centres serving as hubs of expertise on entrepreneurship (role of large domestic and foreign firms).

54. Against this background, experts welcomed UNCTAD's work in developing a toolkit which was practical, provided step-by-step guidelines and was tailored to the needs of developing countries. Within the toolkit, experts particularly emphasized the importance of developing a set of core indicators to assess the effectiveness of entrepreneurship policies, taking into account best practices and lessons learned from other relevant institutions and stakeholders. The policy toolkit, together with the policy framework and the set of core indicators, would provide a comprehensive instrument for entrepreneurship development in developing countries and economies in transition.

II. Organizational matters

A. Election of officers

55. At its opening plenary meeting, the multi-year expert meeting elected the following officers:

Chair: Mr. Mothae Anthony Maruping (Lesotho)

Vice-Chair-cum-Rapporteur: Mr. Ramon Quesada (Philippines)

B. Adoption of the agenda and organization of work

56. At its opening plenary, the multi-year expert meeting adopted the provisional agenda for the session (contained in TD/B/C.II/MEM.1/8). The agenda was thus as follows:

1. Election of officers
2. Adoption of the agenda and organization of work
3. Enterprise development policies and capacity-building in science, technology and innovation
4. Adoption of the report of the meeting

C. Outcome of the session

57. At its closing plenary meeting, on Friday, 21 January 2011, the multi-year expert meeting agreed that the Chair should summarize the discussions (see chap. I).

D. Adoption of the report

58. Also at its closing plenary meeting, the multi-year expert meeting authorized the Vice-Chair-cum-Rapporteur, under the authority of the Chair, to finalize the report after the conclusion of the meeting.

Annex

Attendance*

1. Representatives of the following States members of UNCTAD attended the expert meeting:

Algeria	Libyan Arab Jamahiriya
Angola	Malaysia
Azerbaijan	Mexico
Belarus	Montenegro
Botswana	Morocco
Bhutan	Namibia
Cameroon	Nigeria
China	Oman
Comoros	Peru
Côte d'Ivoire	Philippines
Dominican Republic	Poland
Ecuador	Saudi Arabia
Germany	Singapore
Haiti	Togo
Honduras	Tunisia
Iran (Islamic Republic of)	Turkey
Jordan	United States of America
Kazakhstan	United Republic of Tanzania
Kenya	Viet Nam
Kuwait	Zimbabwe

2. The following intergovernmental organizations were represented at the session:
European Union
3. The following United Nations organization was represented at the session:
International Trade Centre (ITC)
4. The following specialized agencies or related organizations were represented at the session:
International Labour Organization (ILO)
World Intellectual Property Organization (WIPO)
5. The following non-governmental organizations were represented at the session:
General Category
World Association of Former United Nations Interns and Fellows (WAFUNIF)
Ingénieurs du monde

* For the list of participants, see TD/B/C.II/MEM.1/Inf.3.

6. The following representatives of academies and the private sector were invited to the expert meeting:

- Mr. Lazaro **Nyalandu**, Deputy Minister for Industry, Trade and Marketing, United Republic of Tanzania
- Ms. Liisa **Husu**, Hanken School of Economics, Gender and excellence in developing technological and research capacities
- Mr. Gerold **Heinrichs**, Head of Department of the International Bureau of the Federal Ministry of Education and Research, Germany, Brazilian-German Year of Science, Technology and Innovation 2010/11 - A High-level Policy Action
- Mr. Enrique **Canessa**, International Centre for Theoretical Physics, Trieste, “Supporting science in developing countries using open technologies”
- Mr. Rob **Byrne**, Tyndall Centre for Climate Change Research, SPRU, Sussex University, United Kingdom, “Developing indigenous innovation capabilities: the case of climate change”
- Mr. Gabriel **Clerc**, Head of Technology Transfer, SRI/EPFL, “Managing joint innovation and technology development”, Switzerland
- Mr. Andy **Goldstein**, Ludwig-Maximilians, University Entrepreneurship Centre, Munich, “Creation of successful ventures: role of academia in business incubation”, Germany
- Ms. Karen **Wilson**, UNCTAD consultant
- Mr. Camilo **Pinzón**, Chief Project Coordinator, Ministry for Coordination of Production, Employment and Competitiveness, Ecuador
- Mr. Choon **Siong Sim**, Director, Entrepreneurship Development, SPRING, Singapore
- Mr. Marko **Curavic**, Head of Unit, European Commission, Enterprise and Industry Directorate-General - Entrepreneurship Unit
- Mr. Lorenzo **di Pietro**, Director of Human Capital Department, Barcelona Activa, Spain
- Mr. Anthony **Gribben**, European Training Foundation
- Mr. Georges **Haour**, IMD, Lausanne, Switzerland
- Mr. Ramon **Quesada**, Small Business Corporation, Philippines
- Ms. Gulmira **Asanbaeva**, International Labour Organization (ILO), Small Enterprise Programme, Job Creation and Enterprise Development Department
- Mr. Klaus **Haftendorn**, International Labour Organization (ILO), Small Enterprise Programme, Job Creation and Enterprise Development Department
- Mr. Shailendra **Vyakarnam**, Director, Centre for Entrepreneurial Learning, University of Cambridge, United Kingdom
- Ms. Nyokabi **Njuguna**, Entrepreneurship & Leadership Foundation, Kenya
- Mr. Daniel **Bamford**, Business Bridge Initiative, United Kingdom
- Ms. Julia **Prats**, IESE Business School, University of Navarra, Spain
- Ms. Beatrice **Ayuru**, Lira Integrated School, Uganda
- Ms. Christine **Volkman**, UNESCO Chair of Entrepreneurship and Intercultural Management, Schumpeter School of Business and Economics, Germany
- Mr. Andy **Penaluna**, Professor of Creative Entrepreneurship, Swansea Metropolitan University, CEO / Chair - Enterprise Educators United Kingdom
- Ms. Marian **Jones**, University of Glasgow, United Kingdom
- Ms. Victoria **Lennox**, NACUE, United Kingdom and Canada
- Mr. Desai **Narasimhalu**, Technopreneurship Programme, Singapore Management University
- Mr. Colin **Jones**, Australian Innovation Research Centre, University of Tasmania
- Mr. Utz **Dornberger**, SEPT Programme, University of Leipzig, Germany
- Mr. Yves-Henri **Robillard**, World Entrepreneurship Forum (EMLYON Business School), France
- Ms. Jelena **Godjevac**, HP Life (Learning Initiative for Entrepreneurs)
- Mr. Stuart **Anderson**, Shell LiveWIRE

Ms. Kimberly **Voltero**, Microsoft Students for Business Initiative
Mr. Bert **Twaalfhoven**, Chairman, Founder EFER
Mr. Peter **Bankole**, Centre for Enterprise Development Services, Lagos Business
School, Nigeria
Mr. Juliano **Seabra**, Endeavor Brazil
Mr. Armen **Orujyan**, Athgo International, United States
Mr. Nana **Tweneboa-Boateng**, Empretec Ghana Foundation
Mr. Antonio **Pita**, Monterrey Institute of Technology, Mexico
