

The new economy - some consequences for innovation policy

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Ten theses to be presented at the expert meeting preparing the
International Conference of Prime Ministers and Governors,
Berlin, June 2 and 3, 2000

- 1 Major challenges in the field of innovation are globalisation of research and development, new modes of knowledge creation, new production concepts and global networks of firms, decentralisation of intelligence (communication, production, energy), increased flexibility of working conditions, opening up new markets and services, and sustainable development. This means innovation is far broader than creating new technologies. Also governments are required to play new roles, as investor, regulator and facilitator.
- 2 What is needed is a new approach in which the public and private sectors work together in partnership in a variety of different areas to address these challenges:
 - to create a culture of innovation and enterprise and openness to the globalised learning economy_(following the principle of an activating society);
 - to modernise market structures to promote innovation and the adoption of new technologies (following the principle of a new supply/demand policy mix);
 - to promote a research and technology infrastructure which links academic research with business (following the principle of excellent outcome public services);
 - to integrate sustainable development and innovation_(following the principle of a feasible intergenerational solidarity) and
 - to ensure governments themselves innovate in providing public services and take advantage of new opportunities offered by technology (following the principle of enabling policy).
- 3 With increasing globalisation, and ever shortening product lifetimes, business success will increasingly depend on creative and innovative individuals. Governments must play their own part in helping to develop these qualities in the workforce. In order to ensure that scientific and technological advances are turned into commercial success governments should promote a favourable environment. In science-based areas and new technologies, new manufacturing and service firms are one of the main drivers for employment and growth. Actions should aim at favourable start-up conditions for new firms (venture capital, training, management, attitudes) and increased mobility between public R & D and industry. Businesses of all types need to recognise the need to improve their products and services and raise their productivity.
- 4 A competent workforce is the essential ingredient of the new production systems and attractiveness for investments influenced by labour market conditions. Therefore governments should reorient their educational and occupational training systems to promote these new skills and a culture of lifelong learning. They should aim to reduce or eliminate barriers to this reorientation which arise from other government policies – e.g. from the social security system.

- 5 Globalisation leads to the increased need for better linkages to world-wide knowledge production, improved inward knowledge transfer and an international orientation of younger generations (open regional and national innovation systems to the globalised learning economy). Actions should aim at:
- increasing the "absorptive capacity" of firms (especially SMEs) and public research infrastructure, and improving access to knowledge available world-wide;
 - reducing the entry barriers to national/European R & D programmes for non-European partners;
 - improving the international exchange of academics, students, occupational trainees, and the internationalisation of education.
- 6 Governments need to create the right incentives, both for individual researchers and for public sector research institutions, to commercialise and transfer the results of their research to business. They must, in particular, eliminate unnecessary barriers facing university researchers wishing to take their results to market. At the same time, barriers which inhibit firms from pulling through this capability need to be broken down. The transfer of knowledge generally works best through transfer of people and government support for the exchange of personnel between public and private sector institutions (both ways) play a particular role here (including international exchanges). Government policy should also support the growth of industry clusters within regions and localities.
- 7 R & D infrastructures face major challenges in the fusion of technologies, interdisciplinarity, science-based technologies, competitive structures and quality. Actions should aim at:
- re-structuring the public R & D infrastructure into a competitive, flexible and high quality research infrastructure enabled to practise modern modes of knowledge production;
 - re-structuring the university into a place of excellent, user-oriented academic teaching, and
 - establish international networks of excellence.
- 8 Physical and institutional infrastructures constitute long-term path dependence. Physical infrastructures (grid-based energies, water system, waste management, transport, buildings, settlements) face severe inefficiency, produce high social costs and are organisationally inflexible with respect to new technological and institutional approaches. Actions should aim at
- re-structuring infrastructures into a flexible basis of customer-friendly, high quality and high efficiency (natural resources and cost efficiency) public/private services by privatisation or out-sourcing of public companies;
 - internalisation of external costs (e. g. nitrification of ground water and follow-up costs of road transport, fossile energy use):

- change in zoning policies of settlements and cities;
- intensified training and new incentive payments for the staff of public administration.

9 Governments as innovators themselves: In their own activities governments can themselves demonstrate their commitment to innovation. Alongside the various kinds of modernisation of policy described above, governments have the opportunity to use new technologies - particularly the new information and communication technologies - to improve the services they provide to their citizens. Governments should seize these opportunities and commit themselves to targets for such improvement and set out criteria by which the success of their actions can be judged - from targets for their own electronic transactions through to new approaches to involving citizens in the development of policy. Instead of the concept of the "lean state" a model is desirable, which deals with modernising public service provision that is based on forward-looking international approaches and experiences.

10 Main topics for a bench-marking of the innovation system should be:

- Main characteristics of the national innovation systems.
- Conditions of opening up or creating new markets and lead markets and the creation of new firms.
- Linkages of public research and industry (including technology transfer) and conditions of a competitive, flexible and high-quality public research infrastructure.
- New production modes, human capital and occupational training and education.
- Culture of entrepreneurship: attitudes to risk, regulatory barriers, etc.
- Sustainability and innovation.
- New policy roles and innovation within governments and the division of labour between the regional, national, European and international level.
- Best policy practices: design, implementation, evaluation.