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Approaches for the anticipation of skill needs in the "Transitional Labour Market" perspective – the Austrian experience

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Abstract

A synthesis of studies regarding anticipation practices in Austria is provided. The theoretical approach combines concepts from transitional labour market theory, the foresight paradigm, institutional approaches to the coordination of education and employment, and the concept of an anticipation system as a social system of knowledge generation and management. The Analysis focuses on four main aspects: (1) the communication structure, (2) the current state of forecasting, (3) anticipation practices at the regional and sector level, and (4) the measurement and matching instruments.

The Austrian system is an informal system which emphasises a professional-political approach. It relies mainly on “practitioner task forces” which work at an informal level. The system also reflects the segmented structure of the education and training system. New developments at the regional level are related to the establishment of the *Fachhochschule* sector a decade ago. Another strand of development has been regional innovation policy. The regional level serves as a catalyst in setting up more elaborate systems for anticipating skill needs. The criteria for anticipation in a TLM perspective are not fulfilled. In sum, the foresight and transitional labour market approaches could provide several pathways for development.

Zusammenfassung

Das Paper enthält eine Synthese von Studien über das österreichische Antizipations-system. Der theoretische Ansatz kombiniert Konzepte der Übergangsarbeitsmärkte, des Vorauschau-Paradigmas, der Koppelung von Bildung und Beschäftigung, und sozialer Wissensproduktion. Vier Aspekte stehen in Vordergrund: (1) die Kommunikations-struktur, (2) formale Prognosen, (3) Praktiken auf regionaler und sektoraler Ebene, und (4) Mess- und Matching-Instrumente.

Das österreichische Antizipationssystem ist ein informelles System auf Basis eines professionell-politischen Ansatzes. Es baut wesentlich auf informellen *PraktikerInnen-Arbeitsgruppen* auf und reflektiert die segmentierte Struktur des Bildungswesens. Wesentliche Entwicklungsimpulse gehen von der regionalen Ebene aus. Die Kriterien des Ansatzes der Übergangsarbeitsmärkte sind nicht erfüllt und können wichtige Impulse für die Weiterentwicklung geben.

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1 Introduction

This paper provides a synthesis of a set of studies regarding current anticipation practices in Austria against the background of a specific theoretical approach. The approach includes concepts from transitional labour market theory, the foresight paradigm, institutional approaches to the coordination and coupling of education and employment, and the concept of an anticipation system as a social system of knowledge generation and management.

The paper is based on an in-depth study of anticipation practices in Austria (Lassnigg/Markowitsch 2005)[1]. The Analysis focuses on four main aspects: (1) the communication structure among the main actors, (2) the current state of forecasting, (3) anticipation practices at the regional and sector level, and (4) the measurement and matching instruments presently available. In addition, results from an analysis of anticipation practices in the Austrian polytechnic sector (Lassnigg et al. 2003),[2] and from studies related to regional approaches to anticipation and the selection and definition of competences in Austria are also examined.

2 Theoretical background

First, the anticipation of skill needs is conceptualised using the framework of "transitional labour markets". This framework includes a specific focus on the development of labour market dynamics, combined with a broad view of the conditions underlying purposeful policy formulation (Schmid 2002, Schömann/O'Connell 2002, Lassnigg 2005).[3] Second, anticipation is conceptualised using the "foresight" paradigm, which avoids the technical complications associated with the quantitative forecasting methodologies that are prominent in activities designed to facilitate the "early

[1] Lassnigg L.; Markowitsch J. (eds.): Qualität durch Vorausschau. Antizipationsmechanismen und Qualitätssicherung in der österreichischen Berufsbildung. Innsbruck-Wien: StudienVerlag. 2005.

[2] Lassnigg, Lorenz, Unger, Martin, Pechar, Hans, Pellert, Ada, Schmutzer-Hollensteiner, Eva, Westerheijden, Don F. (2003), Review des Auf- und Ausbaues des Fachhochschulsektors, research report commissioned by the Federal Ministry for Education, Science, and Culture. Institute for Advanced Studies, Vienna (download: http://www.bmbwk.gv.at/medien/9813_fh-review.pdf).

[3] Schmid G (2002) Wege in eine neue Vollbeschäftigung. Übergangsarbeitsmärkte und aktivierende Arbeitsmarktpolitik. Frankfurt/New York: Campus; Schömann K / O'Connell P J, Eds. (2002) Education, Training and Employment Dynamics. Transitional Labour Markets in the European Union, Cheltenham, UK and Northampton, MA, USA: Edward Elgar; Lassnigg L (2005), Lifelong learning, school to work and labour market transitions. Position paper work package 4. (TLM.NET 2005 Working Paper No. 2005-06). Amsterdam: SISWO/Social Policy Research. Internet: http://www.siswo.uva.nl/tlm/root_files/LorenzLassnigg.pdf (25.5.2005).

identification" of skill needs (Lassnigg/Markowitsch 2004).[4] Foresight uses the technical methodology of forecasting as only one asset among others, and includes it in systematic practices of communicating forecasts among the involved actors in order to bring their informal knowledge and action potential into the process. Third, anticipation is conceptualised from a specific institutional view on the relationship between education and employment. Fourth, the conception of an anticipation system as a social system of knowledge generation and management is developed, and used as a framework for the presentation and analysis of Austrian practices.

2.1 Transitional labour markets

2.1.1 Basic propositions of Transitional Labour Market theory

The concept of "Transitional Labour Markets" (TLM) has been developed as a theoretical approach that grapples with several new challenges that have arisen in the employment system, in order to find new solutions for coping with them at the policy level (Schmid 2002). Traditional systems of social security have increasingly run into difficulties in coping with "new risks" caused by demands for flexibility on both sides of the labour market. Enterprises have to cope with rising competition in widening and more dynamic markets, and are confronted with rising uncertainty. Individuals are also affected by those economic and technological changes, and increasingly articulate more diverse ambitions in regards to their work lives. The "new risks" of the loss of qualifications or accidental career breaks multiply along the life course and get mixed up with "old risks" related to frictional unemployment, health problems, and ageing.

The gradual erosion of the core concepts of social security, such as the "standard employment contract" and full employment, can be seen as key signals for those changes and challenges. The involvement of individuals in an increasingly dynamic labour market due to the multiplication of various kinds of transitions is the other side of the coin, and this should be taken as a starting point in the search for solutions. Thus, the building of transitional labour markets as institutions that enable and secure various transitions between different kinds of useful activities inside and outside the formal economy should be adopted as a new core aim of labour market policy (Schmid 2002, 176-177).

New kinds of non-standard employment are currently spreading rapidly. However, the key challenge of the TLM framework is to complement this rising flexibility with sufficient social security mechanisms. The development of more dynamic employability based on adaptation and learning is a central objective of such a policy.[5] In order to

[4] Lassnigg L. / Markowitsch J. (Hrsg.) Qualität durch Vorausschau. Antizipationsmechanismen und Qualitätssicherung in der österreichischen Berufsbildung. Innsbruck-Wien: StudienVerlag

[5] Employability has spread as a widely used term. However, it has to be carefully defined in order to preclude its use for the individualisation of all employment risks. Dynamic employability includes the individual side as well as the aggregate side, which means that the conditions for a just distribution of

further economic competitiveness and to guarantee social security under these conditions, support of employability must be established as a public good. Learning is clearly important here, and since education and training systems should support learning, labour market policy must be linked to education and training policy. Consequently, the transition from education and training on the one hand, to employment on the other, has been defined as a particular type of labour market transition. The overall challenge is to determine how to build institutional mechanisms for the bridging of transitions as part of the social security system.

Schömann (2002)[6] has proposed a basic transition theory for modelling shifts between the education and training system on the one hand and the employment system on the other that takes into account interactions between the micro level of individual action and the macro level of aggregate patterns of institutions and social groups. The basic idea is that the two systems each operate based on their own endogenous dynamics, and that transitions between them are guided by those dynamics and by a flexible linkage between the different systems, which may change over time. This linkage is viewed as a primary focus of policy interventions.

The concept of a transitional labour market as a "bridging institution" combines analysis of transition patterns with the institutional arrangements that structure them. In this sense, TLMs are bridging institutions built upon aggregates of transitions. These institutions must be explicitly identified within the broader framework of institutions covering the overall field in question: the education and training system, institutions that govern employment and the labour market, and institutions relevant to areas outside employment (such as the family, retirement regulations, etc.). Moreover, TLMs are defined as institutional arrangements that should support a new understanding of full employment. The core idea is that a multiplicity of employment opportunities combined with the provisioning of security arrangements that support mobility will increase employment and reduce unemployment overall.

Figure 1 outlines the basic principles and criteria of TLM arrangements and policies (Schmid 1998, 2002).[7] The concept combines analytic and prescriptive elements. First, TLM arrangements are based on four principles related to prescriptive policy, located in the centre of the figure:

A) the combination of paid employment with other useful social activities;

B) the combination of different income sources (e.g., wages and transfers);

C) the provision of valid entitlements geared toward transitional choices;

D) fiscal incentives favouring employment rather than unemployment.

---

risks among individuals and society must be created, including the necessary conditions for maintaining employability, the right incentives to invest, appropriate support structures, etc.

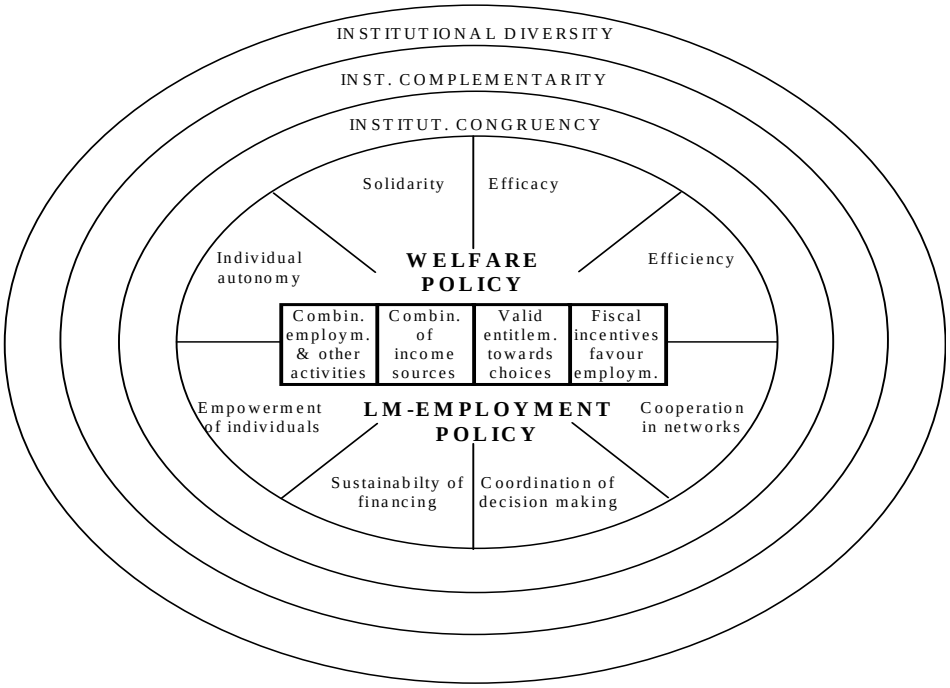
[6] Schömann K (2002) The theory of labour market transitions applied to the transitional labour market of education and training. Schömann K / O'Connell P J, Eds. (2002) Education, Training and Employment Dynamics. Transitional Labour Markets in the European Union, Cheltenham, UK and Northampton, MA, USA: Edward Elgar, 8-38.

[7] Schmid G (1998) Transitional labour markets: A new European Employment Strategy. WZB Discussion Paper FS I 98-206, Berlin.

These principles directly affect individuals and their social environment and relate them to other actors, i.e., employers and the providers of public assistance. Second, they are complemented by basic criteria for labour market and employment policy, as well as more general welfare policy. The latter provides general principles that should also be applied to labour market and employment policy as part of broader welfare policies:

- At the level of *labour market and employment policy*, four criteria distinguish favourable from unfavourable transitional arrangements: the empowerment of individuals; the sustainability of financing; flexible coordination between levels of decision making; and cooperative networks (Schmid 1998, 9).
- At the level of *more general welfare policy provision*, four generic criteria identify good institutional arrangements: individual autonomy; solidarity; efficacy; and efficiency.

Figure 1 Core elements and criteria of TLM policy devices and requirements



Source Figure by the author, derived from Schmid 1998, 2002.

Third, the outer three circles of figure 1 mark more generalised strategies that are considered essential for risk management (Schmid 2002, 238-240):

a) institutional diversity, in order to cope with the various kinds of income related risks;

b) institutional complementarities, in order to coordinate the various social security systems and their respective incentives;

c) institutional congruency, in order to match decision-making and responsibility.

The risk management approach has been proposed as an integrative framework for the building of TLMs (Schmid 2006, 2004).[8] The significance of the TLM concept can be illustrated by quoting Barr, a seminal author of economic welfare theory, who suggests that the following is one of two sources of social insurance: "The need for insurance arises because in industrial countries employment is a largely binary phenomenon: a person is either employed or unemployed, either working or retired", and he adds: "Thus the risks against which social insurance offers protection are to some extent a social construct."(Barr 2003, 24)[9] It is exactly this social construction of a binary alternative that the TLM concept avoids by trying to promote more gradual shifts through the establishment of institutional bridges that provide different mixtures of employment and non-employment. This change provides a major challenge for risk management because it alters the overall scope and distribution of risks by supporting flexibility. Thus, paradoxically, adding more flexibility in order to provide better employment outcomes and to reduce risks at the unemployment end of the binary phenomenon may lead to more risks overall.

TLMs are bound to establish arrangements that offer additional employment opportunities, in combination with other sources of risk management. Risks with regard to ETTs concern employability that in turn should be improved through the establishment of TLMs. The apprenticeship system is considered the paradigmatic case of a TLM.

2.1.2 Anticipation in Transitional Labour Markets

Schmid (2004) shows that methods of risk analysis from other areas could also be applied to risks related to transitions in the labour market. Effective risk management would require foresight and analysis of the distribution of risks among the actors, as well as knowledge about how actor decision-making reacts to risks. The decisions of actors, such as individuals and enterprises, could therefore be used by TLMs as mechanisms for risk management. TLMs can provide security in the case of critical events, and can also support risk-taking in the case of transitions with insecure expectations. The establishment of effective systems of foresight regarding the demand for qualifications has been proposed as a typical example of potential TLM policies in the area of education and training-related transitions. In such systems, the appropriate distribution and communication of results to the different actors involved could help to manage risks related to educational decision-making.

How this type of foresight policy should be developed remains an open question. Schmid as used the analogy of investments in the stock market, where a risk analysis of certain assets can be taken as a basis for decision-making, given certain preferences for

[8] Schmid G (2006) Social risk management through transitional labour markets. Socio-Economic Review 4, 1-33; Schmid G (2004) Soziales Risikomanagement durch Übergangsarbeitsmärkte. WZB Discussion Paper SP I 2004-110 (Internet: http://skylla.wz-berlin.de/pdf/2004/i04-110.pdf, 5.1.2006).

[9] Barr N (2003) The welfare state as piggy bank. Information, risk, uncertainty, and the role of the state. Oxford: Oxford University Press. Barr N (2003) The welfare state as piggy bank. Information, risk, uncertainty, and the role of the state. Oxford: Oxford University Press.

risk-taking. One can build a mixed portfolio of assets according to his or her risk behaviour. Decisions about human capital investment could in principle also be based on this kind of risk assessment. This would involve the development of measurement methods for assessing the risks related to certain educational programmes in the medium and longer term, which could be the basis for individual decisions as well as insurance mechanisms in order to avoid, e.g., herd effects towards the less risky choices, or personal ruin due to excessive risk-taking. However, we might question how far the analogy between the stock market and the educational market can be stretched.[10]

Although no such policy has yet been concretely implemented, a strategy couched in terms of risk assessment implicitly assumes a strong market approach to education and training. In addition, we might run into debates similar to those surrounding comparisons of the labour market with the capital market in the 1980s, which raised the following questions: how quickly can a human change her or his qualification portfolio? How far can we mix a qualification portfolio compared to a portfolio of different assets, including different degrees of risk? To what extent are we "fixed" to our human resource assets if we have collected them during a certain period? What is the extent of personal and other restrictions that limit the rationality of a portfolio? Etc.

Another question relates to the issue of market failure in training and education. If we want to choose a full market solution, we have to be aware of problems associated with market failure. There are well known technical problems with the training market, as summarised by Booth/Snower (1996), e.g., credit constraints, poaching, and many others.[11] The policy measures they propose do not refer directly to anticipation (see Figure A1 in the Appendix). However, some of the policy measures indirectly refer to problems of anticipation, e.g., the construction principles of different kinds of loans and vouchers necessarily include expectations about the future. Moreover, institutional measures of social partnership also need to take into account expectations about future development to be able to produce solutions for the training market.

More fundamental arguments regarding market failure in education go beyond these technical problems. They concern "higher order values" (OECD 1996, 184), such as better health, social cohesion, a balanced income distribution, democracy, and political participation. Such problems are not easily measurable, however, at least in the area of initial education and training, there is a broad consensus that these values are important enough to justify the establishment of education and training institutions that are not market-driven.

We must consider integrating anticipation into TLM policies that are alternatives to an individualistic market orientation and adopt a more institutional view. Such n approach could help to provide a certain level of structural matching between the supply

[10] See for a discussion Grubb 2002. Grubb W N (2002) Who am I. The inadequacy of career information in the information age. Paper commissioned jointly by the European Commission and the OECD for a review of policies for information, guidance and counselling services. August. Paris: OECD. Internet: http://www.oecd.org/dataoecd/32/35/1954678.pdf (28.1.2006)

[11] Booth, Alison L. & Snower, Dennis J. (1996) Acquiring skills. Market failures, their symptoms and policy responses. Cambridge: CUP; see also Lassnigg 2000, 19-21, 42-46.

of education and training and the demand for competences. At the level of the public initial education and training system, the provision of programmes should be matched to the demand for skills in a reasonable way in order to smooth initial transitions into the employment system as much as possible, or at least to avoid foreseeable transition problems for specific groups of young people. Furthermore, initial investments in education and training made by individuals and society should be, at least to some extent, sustainable in the medium or long-term. Thus, decisions about the provisioning of programmes should be informed by anticipation activities in such a way that the principles of TLM policy shown in figure 1 are fulfilled, or at least not severely damaged.

The basic problem of structural matching is that individual choices are channelled by the structure of the education and training system: individuals can only decide among existing alternatives. The provision of those alternatives is not produced in the market but by strong institutional structures such as public education and training systems, and in the last instance by political decision-making.

If we go back to the elements and criteria of TLM policies mapped out in Figure 1, what implications can be derived for anticipation policies? First, the four basic principles do not directly apply to anticipation procedures, as anticipation is not directly involved in transitional movements. Rather, it is a contextual condition concerning information about the opportunities and risks involved in certain choices. That information applies to the individuals making the choices, as well as to decisions concerning different kinds of support for the individuals. The principle of the provision of valid entitlements geared towards transitional choices may be the most directly related to anticipation of risks and opportunities. However, the application of anticipation procedures to individual decisions sets very high demands on the measures, which for the most par will not be possible. The aggregate provision of measures supporting transitions could more easily be supported by anticipation procedures: e.g., determining what kinds of training are provided to support transitions, how transitions might be supported by various kinds of incentives, and how entitlements (or selection procedures) are constructed. In fact, policy is often based implicitly or explicitly on certain ways of anticipation risks and opportunities. A clear example is that the supply of labour market training and selection into are based in part on analysis of the demand for competences.

Second, the more general principles that should guide welfare policies (individual autonomy, solidarity, efficacy, efficiency) and labour market and employment policies (empowerment, sustainability of financing, co-ordinated decision making, networks) can also be related to anticipation procedures in several ways:

- The principles of individual autonomy and empowerment concern the provisionning of and access to proper information about risks and opportunities related to transitional choices, as well as the provisioning of independent and qualified career guidance and counselling.
- The principle of solidarity indicates that unequal access to necessary resources should be compensated for in terms of information, guidance and counselling, as

well as the provisioning of resources designed to support the realisation of transitional choices.

- The principles of efficacy and efficiency are closely related to the principle of sustainability of financing. They apply to anticipation at both the individual and aggregate level. At the individual level, the anticipation of risks and opportunities include sufficient support to ensure success on a given transitional pathway. The integration of anticipation into individual development plans based on a mid term perspective could be an example of this. At the aggregate level, fulfilment of the principles means that the portfolio of measures provided for support should be brought in line with the anticipation of risks and opportunities for transitions. Provided training measures must be in line with the demand for competences as well as with the characteristics of the target groups. The input provided for support musst be sufficient to reach the negotiated stipulated goals. Sufficient follow-ups, monitoring, and evaluation, not only of the measures taken but also of the anticipation procedures included, are necessary in order to fulfil the principles.
- The principles of co-ordination and networking are very important for the creation of successful anticipation procedures. Knowledge from the various actors must be combined and evaluated at the level of knowledge production as well as at the level of knowledge dissemination and utilisation, which is seldom the case with extant policies.

Third, the more generalised strategies of TLM policies, institutional diversity, institutional complementarities, and institutional congruency are also important to anticipation procedures. Institutional diversity means that anticipation should be done jointly by diverse actors, who have to co-operate. Institutional complementarities in anticipation might work towards a comprehensive system which includes initial and continuing education and training (education market), education and employment (labour market), and different aspects of financing and incentives which influence the interaction of education and labour markets. Finally, institutional congruency is a particularly important aspect of anticipation, because the structural matching of education and training provision and demand directly channel individual educational choices. If the matching is done poorly, individuals have to bear the costs for decisions at the aggregate level. A balanced structure of decision-making and responsibility means that the different levels of decisions and responsibilities must be brought in line.

2.2 Foresight as a kind of policy making

Education and training only makes sense when it is related to the future. Few people, if any, will deny this truism. However, if we ask how the relationship to the future is managed in education and training policy, we find that few systematic attempts have been made to investigate the topic. Rather, it remains an implicit assumption covered by the old slogan of "non scholae sed vitae discimus", which has been questioned extensively. On the contrary, relations to the past can be found quite easily in education and training. The history of education is an important topic, as is locating the roots of

our educational objectives. It took many decades of educational research for the basic issue of the transfer of individual knowledge aquired in school to the practice of one's life to become a hot topic in the field.

As long as the future is more or less a kind of linear succession of the present and the present resembles the past, this is not particularly problematic. This might have been the case in the past when education and training systems experienced changes gradually and slowly – except during periods of crisis and radical change when education was not strongly emphasised. Over the last decade or two, however, such periods of radical change have been observed from many perspectives. Thus, the belief that the future might be a succession of the past has more or less been abandoned. Complexity has also become a key concept in contemporary thinking, pointing to the manner in which the interaction of numerous variables (even if it is only a limited number) can produce unstable and unpredictable conditions. A prominent proposal for dealing with this situation is to take deliberate action and to try to shape the future through strategic and goal oriented interventions.

Foresight has consequently developed as a methodology for relating the present to the future in a systematic way.[12] The approach tries to combine information on trends with the strategic plans of key actors in a given field who might be able to influence and modify the trends in a certain direction. So, foresight is not only a method of knowledge production but also a new method for formulating policy. It combines the procedures of forecasting[13] with the action strategies of the relevant actors in a field, and creates structures of communication and networking among them.

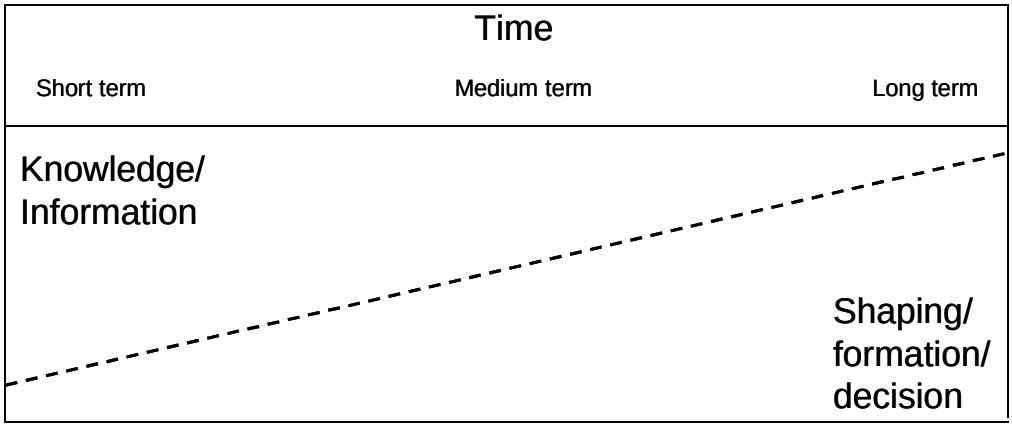
When considering how to improve the relation between supply and demand in education and training, or between the education market and the labour market, we can assume three basic elements of foresight: time horizons, consolidated knowledge and information, and arrangements for making more or less deliberate choices and assumptions (the element of shaping/formation/decision making). Figure 2 illustrates the relationship between these elements: the wider the time horizon we adopt for our look into the future, the more the element of shaping and formation will gain ground at the expense of consolidated knowledge and information. In any case, this mechanism functions whether we recognise it or not: in any forecast we have to make assumptions about the future, and the longer the projected period, the more the results are inevitably determined by our assumptions. In practice, this first order mechanism is often more or less hidden behind an objectivistic presentation of the results. The latter even seems to express a second order mechanism based on the interests of the expert communities to reify their products vis-à-vis their users. So, instead of having results shaped by our

12 Keenan M / Abbott D/ Scapolo F / Zappacosta M (2003) Mapping Foresight Competence in Europe: The EUROFORE Pilot Project IPTS Technical Report Series, EUR 20755 EN. Seville. (Internet: ftp://ftp.jrc.es/pub/EURdoc/eur20755en.pdf; 4.10.2005).

13 We use the term forecasting to denote the different kinds of formal and quantitative methods and procedures, ranging from, e.g., simple projection techniques to complex and elaborate prognoses using econometric models.

assumptions in a more or less hidden way,[14] why not take into account the shaping mechanisms explicitly, by incorporating the actors into the procedure and trying to understand how the development of the system might be deliberately shaped?

Figure 2 Time-dependent shift between perspectives



In education and training, the relation of supply and demand is very much shaped by the past. This is due to the fact that the qualification structure of the workforce has been built up over roughly three decades, in part within structures of education and training systems which have been shaped by precedents established in earlier periods. Furthermore, the actual quality of the relationship also projects its shadow into the future, because it can only change slowly via the new yearly supply from initial education and training. Short term changes can potentially be provided by continuing education and training, however, if substantial changes are needed, then substantial resources are will also be required (which increases the risk of making erroneous decisions).

If we look at these problems from the point of view of policy design, we can identify certain contradictions. On the one hand, this is a difficult setting in which to provide incentives for policy action, as massive short-term action is needed for improvement in the long run. However, at the same time, long term improvements cannot be expected to provide many visible results in the short run (which is important in daily political struggles). On the other hand, because of this more long-term time horizon, the measures to be implemented might also be less politicised, and for this reason more deliberate action might be possible than in "hot", concrete, and short-term areas of daily politics.

The following recommendations for shaping the relationship between supply and demand can be identified as a consequence of the reasoning outlined above:

[14] This point seems to be strongly related to the complexity of the forecasting methods. The more I try to be realistic, the more complex the model gets, and the less transparent the relationship between real inputs and assumptions becomes. Simple methodologies might be further from reality, however, the factors that produce the results are more transparent.

- First, to it is necessary to set a reasonable time horizon for the usability of qualifications.
- Second, efforts must be made to provide a reasonable mixture of short-run elements with more robust long-term elements of qualification.

Finding and developing long-run elements and a forging a good relationship between initial and continuing education seem to be the most important issue related to the improvement of the relation between supply and demand. These issues would also be crucial tasks in foresight activities.

The foresight approach is based on the following elements (Keenan et al. 2003, 6. 11, see also Gavigan et al. 2001):[15]

- Structured anticipation and projections of long-term developments and needs.
- Examination of a wide range of influential factors, based on an interdisciplinary approach, with the pooling and sharing of different types of expertise.
- Use of formal techniques, based on eliciting expertise, structuring the approach, synthesising different sources of information, and the outcomes generated by the process.
- Interactive and participative methods of exploratory debate, analysis, and study, involving a wide variety of stakeholders.
- Awareness that forging new social networks is equally, if not more, important than more formal products such as reports, lists, and action plans.
- Institutionalised structures that facilitate the creation of networks and channels of communication between different actors.
- Since products go beyond scenarios and plans, the elaboration of a guiding strategic vision, to which there can be a shared sense of commitment, is also crucial.
- Explicit recognition and explication of the implications of present day decisions and actions.
- A long-term orientation (generally a period of ten years), even though the objective is to inform current decisions and to generate insights geared towards more immediate developments.

In sum, foresight combines the application of formal procedures with the selection of actors, and will help to promote a system that underscores the communication of results and their integration with decision-making procedures.

[15] Keenan M / Abbott D/ Scapolo F / Zappacosta M (2003) Mapping Foresight Competence in Europe: The EUROFORE Pilot Project IPTS Technical Report Series, EUR 20755 EN. Seville. (Internet: ftp://ftp.jrc.es/pub/EURdoc/eur20755en.pdf; 4.10.2005)

2.3 Coordination and coupling between education and the economy

The meaning of what we might understand by "skill needs" and its role in the processes of coordination of the labour market and the education market is more deeply discussed in this section. We propose a broader and more complex perspective on this than that mostly taken in approaches of forecasting specific skill profiles empirically identified by statistical classifications. This is also an implication of the framework of transitional labour markets. This point concerns the question of what we really mean when discussing "skill needs". In traditional forecasting, the demand for skills is taken as a question of recognition and of quasi "objective observation". In a nutshell, the logic of reasoning can be expressed as follows: The economy (or the demand side, or the enterprises) will need certain kinds of empirically classified skills profiles with a certain quantity, within a certain time period (with a certain probability). Those elements have to be measured and forecasted with the techniques applied in a more or less sophisticated and differentiated manner. In this context of "objective observation", the main tasks should be the development of descriptors of skills, and a methodology based on observation and forecasting. Given the results, the actors have to deal with the information they are provided in the way they think will work most in their interests. This oversimplified view is taken as a starting point by many exercises designed to help in the "early identification" of skills needs. The picture of early identification is telling as it is taken from medicine, where a disease, say cancer, which is an objective phenomenon, should be identified in its early stages.

However, what if "skill needs" are not connected to the quality of an objectively recognisable asset, as modelled in the traditional world of forecasting? What kind of artefact do we forecast in such a case? Indeed, there are at least four indications that we should be very cautious when making such predictions. First, there exists a longstanding debate over what descriptors should be used for the assessment of skills: should we use occupations (related to employment, or the demand side), qualifications (related to education and training, or the supply side), or competences (more generative abstract assets, lying behind occupations and qualifications)? What state of aggregation should we use them in? Etc. This debate is also related to the question of the homogeneity of profiles in practical use. At what point is the application of a certain profile similar among its carriers, and where do different specifications of the use of a profile (related to the issues of over-education and under-education) begin?

Second, there is the issue of change over time. Clearly, we must contend with changes in the quantitative distribution of whatever kind of profiles we identify, as well as qualitative changes in the profiles themselves (i.e. changes within the profiles). To what extent are those changes recognisable if we use time series data on certain kinds of profiles, which – by definition – have to be consistent and homogenous?

Third, there is the problem of appropriately matching educational and employment profiles. What kind of relationship exists between those two sides, and how is it generated? How is the idiosyncratic (temporary) match of an individual person to an individual job related to the categorical structures of occupations, qualifications, and the

like? How is this relation embedded in the multilevel structures of top-down and bottom-up processes between the micro and macro-structures of individual actions and institutional patterns? If we assume that interactions occur between the supply and the demand side and influence the institutional pattern that conversely shapes and structures the interaction processes, how can those processes be related to forecasting activities?

Finally, the question of the application and use of the results of forecasts is also at issue, and is closely related to the time-frame of the practice. This question leads to the institutional frameworks in which the coordination of the supply and demand for skills is embedded. Here, the issue of stability and change, and its dynamic over time, is a major concern. In an institutional interpretation, we can take the skills profiles given by occupations and qualifications as a stabilising mechanism in the allocation process of supply and demand in the labour market via a process of structuring through information. Skill profiles provide an institutional structure which guides and simplifies individual matching processes and relates the different collective actors (social partners, education and training providers) to the systems involved (i.e., the employment system and the education and training system) in order to guide and simplify coordination and coupling activities. However, there are also limits to the stabilising function of those structures because of economic and social change. Thus, they must be able to absorb change, which is not a self-evident feature, as many actors and their habits can be expected to reinforce stabilising institutions thorugh positive feedback loops. As a consequence, we must ask how institutional structures can be enabled so as to allow for both stability and adaptation to change. This question points to the construction principles of the institutional frameworks. During the last two or three decades, a mismatch between existing structures and new developments has developed. In the first place, a strong tendency to abandon structures altogether and to replace them with "the market" has developed and, more recently, debate has focused on the need to build a new structure founded on new kinds of descriptors, e.g., competences.[16]

Taken together, these four points highlight that in order to relate the first three more empirical problems (which descriptors to take, how to integrate change, and how to measure matching?) to the fourth more conceptual problem (how to construct the institutional framework for matching?) is a crucial issue. This means that forecasting procedures must be embedded in a framework that deals with the generation of the institutional structures that coordinate supply and demand. Thus, the use and application of the information generated by forecasting procedures that are exogenous to the coordination process should be transformed into an endogenous element of a social system based on the principles of foresight. However, what does this really mean?[17]

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16 See the OECD Project on the definition and selection of competences: Rychen, D.S. / Salganik, L.H. (Ed.) Key Competencies for a Successful Life and a Well-Functioning Society. Göttingen: Hogrefe & Huber; see also OECD-Executive summary: http://www.pisa.oecd.org/-dataoecd/47/61/35070367.pdf (12.12.2005); more recently the European Union is developing a European Qualification Framework (EQF) which also tries to define common descriptors for competencies which might function as signals on the education and labour markets (Internet: http://europa.eu.int/comm/education/policies/2010/consultations_en.html (12.12.2005).

17 The answer to this question might also be understood as an answer to the question about the difference between the manpower planning approach and the new concept of "early identification" which George Psacharopoulos (2005, 32) asked rhetorically in his sceptical comment to these

In the paradigm of "early identification", a supply of information is produced which is expected to be used by actors in the different systems, at either individual or at aggregate levels. Exogenous forecasting can be geared towards different kinds of activities, which have different methodological implications: it can try to inform individual actors on the supply and demand side regarding their contracting decisions and investments in education and training in the short-term (what is needed now, or within the next two years, so that both sides can take action to adapt to the needs?). Alternatively, exogenous forecasting can try to inform collective actors primarily on the education and training side regarding their decisions about their supply in the medium or long term (what kinds of profiles and pathways should be provided through initial education and training, and in which direction should continuing education and training be shaped in order to meet future skills needs?).

In an anticipation framework, to make information endogenous involves infusing the results of forecasting into a communication and knowledge generating process which should serve two objectives:

- First, to combine formal knowledge from the forecast with informal knowledge from the actors involved.
- Second, to use the results as an element of institution building by relating them to existing structures, both by incorporating them into the structures and using them to guide adaption.

The systematic combination of formal knowledge generated by forecasting with informal knowledge from the actors involved is not only a precondition for the diffusion of the results (although, if no one except the researchers are aware of them, which is frequently the case, they cannot be used anyway) but are also a kind of examination of the action plans of the actors, *and thereby a process for generating new knowledge*. Next, communication among actors regarding solutions and alternatives should relate the results of knowledge production to existing institutional structures which might be adapted as a consequence.[18]

Another consequence of the above reasoning is that the objective of anticipation procedures should not be confined to the detection of specific skill needs, but should also address issues such as the generative institutional frames of the construction of skills, and broader issues tied to the development of skill supply and demand (e.g., the ageing workforce, gender aspects, economic and innovation policy, or regional development).

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issues. Psacharopoulos G (2005) Die Verknüpfung von Forschung, Politik und Praxis. In: Schmidt S L / Strietska-Ilina O / Tessaring M / Dworschak B, eds. (2005) Ermittlung künftiger Qualifikations-Erfordernisse. Forschungstransfer in Politik und Praxis. Cedefop Reference Series 59. Luxemburg: OOP-EU, 30-39.

[18] Lindley (2002, 135) has pointed to the problems of communicating the results of forecasting to broader user communities, and of using them for elaborating a process of reflective practice. Lindley R M (2002) Projections and institutions: the state of play in Britain. In: Neugart M / Schömann K, eds. (2002) Forecasting labour markets in OECD countries. Measuring and tackling mismatches. Cheltenham: Elgar, 108-150.

A specific and more far-reaching question concerning the qualitative nature of skill needs is related to broader contextual issues. It concerns the relationship between emergent processes in the background of changing skill needs vs. the generation of new and changing skill needs due to certain policy trajectories. A great deal of research has followed the seminal paper by Finegold/Soskice (1998) regarding different skills equilibriums[19] which, overall, showed that a high skill trajectory only emerges if appropriate policies towards innovation have also been adopted. Following this argument, and taking into account the plentiful results regarding the broad range of economic returns from education, the notion of "objective skill needs" becomes more relative, since skill needs are conditional on certain basic policy decisions in a given area or region.

2.4 The concept of an anticipation system

A core task of an "anticipation system" is the integration of an expected supply-demand employment dynamic into ET systems. A very important pre-condition of such a system is that it must include a mixture of mechanisms for knowledge/information and mechanisms for shaping/formation. Anticipation can never be accomplished through the collection and presentation of knowledge alone. It necessarily includes several formative functions that shape the relationship between supply and demand. Shaping concerns questions such as: what kind of qualifications should match what kind of demand? What assumptions exist about the future development of supply and demand? What kind of framework and methodology should be used in foresight procedures?

Another important characteristic of such a system is that anticipation is brought about in a social system where actors from research and practice take distributed roles. This kind of social system should be developed in a more or less deliberate and formalised way but, even if this does not occur, it will still exist in some form.

In a more technical sense, anticipation systems must also take into account qualitative and quantitative aspects of supply and demand in an appropriate time horizon, and it must take change and innovation into account. Some sense of comprehensiveness and oversight over the whole of the VET system are thus another requirement for a well functioning anticipation system.

More specifically, we can differentiate four key dimensions of an anticipation system. It must consider:

- the quantitative distribution of competences/qualifications
- the shape and structure of qualitative profiles
- the time horizon necessary for a reasonable functioning of anticipation, which is related to the configuration of supply profiles (short-medium-long-term)

[19] Finegold D / Soskice, D. (1988) The Failure of Training in Britain: Analysis and Prescription. Oxford Review of Economic Policy, Autumn, 21-51.

- the benefits of mixing the adaptation and innovation perspective.

A core challenge for any anticipation system is the organisation of the mixture of the two functions of production of knowledge and information on the one hand and of shaping, formation, and decision-making on the other hand. This means that the different kinds of knowledge possessed by the various actors involved must be combined with strategic plans as well as the decisions of other actors. Communication is therefore a very important aspect of anticipation systems.

The future always turns out as a mixture of developments in existing structures (which are to some extent influenced by the past), and the consequences of current (and future) decisions. In the field of education and training, the role of innovation is an important example illustrating this fact. Innovation research points out that a given economy and society encompasses a certain kind of innovation regime, which can be influenced by innovation policy. Thus, future education and training requirements will differ depending on the plans and strategies of a given innovation policy. A prominent example of this phenomenon is the British debate regarding the "low skills equilibrium" and the comprehensive requirements for a "high skills policy"; Lloyd/Payne 2002, 2004, Ellis 2003.[20] A more recent study regarding innovation activities in the realm of science and technology in Austria, commissioned by the social partners and the responsible federal ministries, produced very ambivalent conclusions about skill needs arising from the enterprise sector and the expert community (ÖIBF/IBW 2003).[21]

It is reasonable to think of an anticipation system as a social system, which is strongly linked to the innovation system and encompasses two strands: a "technical" strand that produces scientifically based information (prognoses, projections, surveys, and other kinds of gathering data and information), and a "professional-political" strand which brings the informal knowledge of actors and their strategic plans into the process, and relates the data and information of the technical strand to decision making. Anticipation systems in this understanding are social systems of actors from research, practices in business and education-training, policy and decision making at various levels, and from the innovation system. All of these are linked together in a certain pattern and division of labour.

This understanding of an anticipation system is broader than the perspective of "early recognition" of future demands for qualification and competence, which focuses

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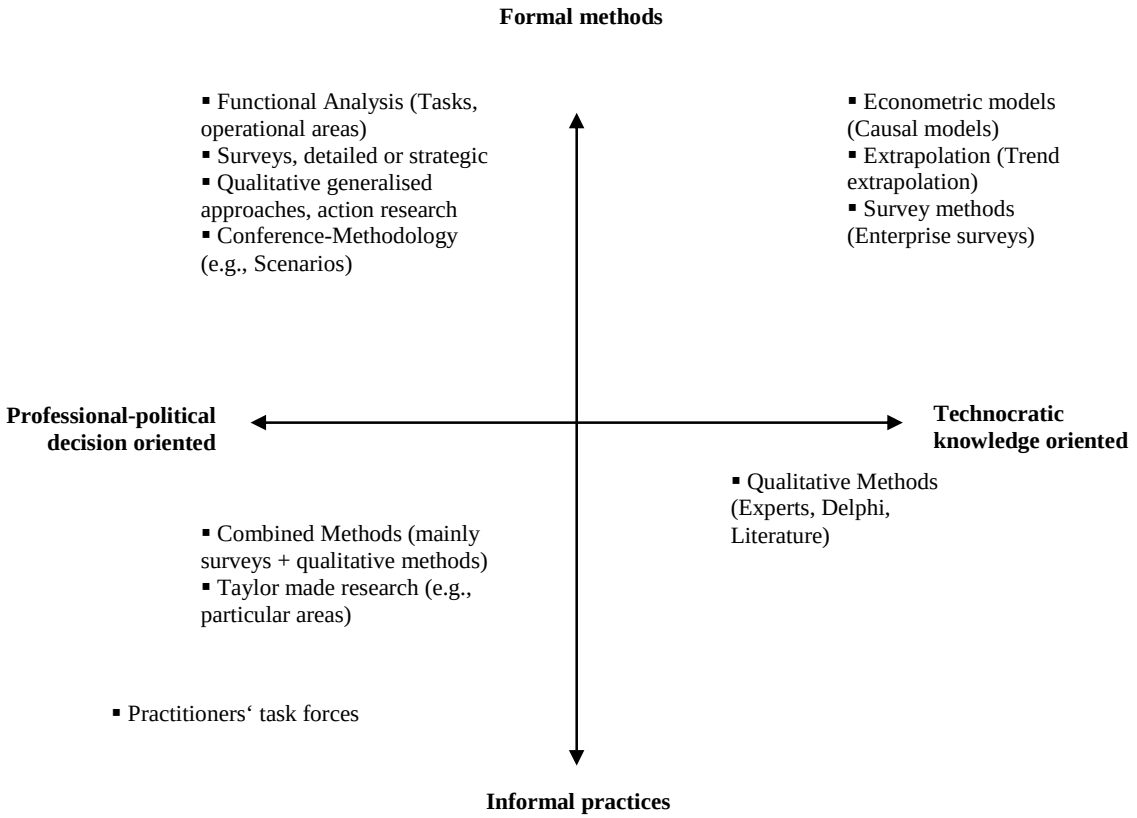
[20] Lloyd C / Payne J (2002) In search of the high skills society. Some reflections on current visions. SKOPE Research Paper No.32 Summer 2002. Oxford and Warwick. Internet: http://www.skope.ox.ac.uk/WorkingPapers/SKOPEWP32.pdf
Lloyd C / Payne J (2004) 'Idle Fancy' or 'Concrete Will'? Defining and realising a high skills vision for the UK. SKOPE Research Paper No.47 Spring 2004. Oxford and Warwick. Internet: http://www.skope.ox.ac.uk/WorkingPapers/SKOPEWP47.pdf
Ellis S P (2003) Anticipating employers' skills needs: the case for intervention. International Journal of Manpower Volume 24 Number 1 2003 pp. 83-96. Internet: http://www.emeraldinsight.com/Insight/ViewContentServlet?Filename=Published/EmeraldFullTextArticle/Articles/0160240105.html

[21] ÖIBF/IBW (2003) Innovation und Hochschulbildung. Chancen und Herausforderungen einer technisch-naturwissenschaftlichen Qualifizierungsoffensive für Österreich. Internet: http://www.oeibf.at/files/iuhibwoeibf.pdf

on the technical strand and the production of accurate, "objective" information about future trends. This research oriented understanding, taken for its own, tends to downplay the shaping element in anticipation in favour of the information element, as each technical method requires assumptions about future development which cannot be constructed scientifically in an "objective" manner.

In sum, it is necessary to clarify this relationship and to develop the assumptions of an anticipation approach in cooperation with the practitioners and decision makers who, to a certain extent, are responsible for the future development. This division of labour charges the research community with the technocratic tasks of finding, selecting, and developing appropriate models of projection, forecast and foresight. In contrast, it allocates to practitioners and decision makers – in cooperation with research – the professional-political tasks of embedding the technocratic element into the social process of knowledge production while integrating informal knowledge and decision making.

Figure 3 Map of anticipation methods



Source: Feijen/Reubsaet 1996, 2002; allocation to the figure by the author

A comprehensive evaluation of anticipation methods in the EU 15, including an inventory of the methods used[22], was performed in the mid 1990s (Feijen/Reubsaet

[22] Feijen T / Reubsaet T, Coord. (1996) Instruments, tools and policies to anticipate the effects of industrial change on employment and vocational qualifications. Study for the European

1996, 2002). Figure 3 incorporates the different methods of anticipation into the classification scheme developed above. The two dimensions are more gradual than categorical; however, we can identify four broad types of methods. There may be also some variation methodologically, e.g., more qualitative oriented formal methods can also be used in technocratic and knowledge oriented procedures, and practitioner task forces might also be applied in a formal way. Therefore, the analysis of a concrete system has to classify the various methods in a manner that is empirically justified.

3 Description of the Austrian system for anticipating skill needs

In Lassnigg and Markowitsch (2005) the Austrian system for anticipating skill needs was analysed according to the theoretical concepts outlined above. A set of basic assumptions were developed:

(1) Anticipation practices should be included in vocational education and training (VET) to help guide changes in programmes and curricula. Thus, the question is not whether or not anticipation practices exist, but how they are performed.

(2) Collectively, anticipation practices can be viewed as a system, in that a comprehensive and more or less inclusive pattern exists within which the various actors are bound together fairly tightly by flows of information, and by discourse about facts and issues related to shaping further development.

(3) The anticipation system is composed of the elements mentioned above, such as professional-political and technocratic mechanisms, which are the basis for the exchange and application of both formal and informal elements of information. The strands may be integrated but may also be completely segmented, with formal quantitative forecasts being only one possible source of information and probably not the most important one.

(4) Due to the specialised and segmented character of the Austrian VET system, most anticpation will involve various smaller subsystems of specialised and/or localised practices rather than one comprehensive national anticipation system.

In this chapter, the following aspects of the Austrian anticipation system are presented:

- Overall characteristics (main building blocks, segments, areas of attention, the main players involved);
- Stylised communication flows among players;
- Selected methods, instruments, and tools for anticipation

Commission, co-ordinated by ITS-Nijmegen (T.Feijen & T.Reubsaet). Nijmegen: ITS. Internet: http://www.its.kun.nl/en/

Feijen T / Reubsaet T (2002) Anticipation of industrial change and the needs of employment. Unpublished manuscript. REVICE Center for Work, Training and Social Policy.

3.1 Overall characteristics of VET and anticipation

3.1.1 Basic characteristics of VET

The Austrian VET system is structured due to the *qualification space* (Müller/Shavit 1996),[23] segmented to occupational fields and hierarchical tracks, which are strongly specialised to numerous programmes. Qualifications are standardised at the national level due to the existence of different sub-systems (apprenticeship, full-time VET schools and colleges, polytechnics, universities), but there are no objective assessments to determine whether graduates have achieved the necessary standards. However, there are periodical updates of programmes and curricula. During the last several decades, attempts have been made to reduce the number of specialisations, to provide new programmes according to new demands, and to allow for upward mobility along the tracks. For a basic description of the Austrian ET system, see Appendix 1.

3.1.2 Monitoring of skill needs: the lack of regular formal procedures

Despite a strong focus on specialised qualifications, no regular monitoring of skill needs at the level of the overall system is in place in the education and training sphere, and the matching of qualifications to their applications in employment is not revued on a regular basis. A system for monitoring current skill needs has been commissioned by the public employment service for the purpose of supporting labour exchange. However, this system is not directly related to education and training programmes. Formal approaches to forecasting skill needs on a national, macro level are weak in two respects: the methodological approach they utilise is based on supply-side projections, and the projections have not been performed on a regular basis (only at about five year intervals, using classifications which are not comparable to previous results).

The regular, standard econometric short and medium-term forecasts of economic development, employment and the labour market do not provide information regarding skills. As a result, there is a lack of knowledge about the relationship between the supply and demand for skills. Until very recently, regular statistical information about the supply and employment situations of people holding specialised qualifications was only available every ten years from the full population survey, with the information being available for analysis with another time lag of at least five years – as a consequence sometimes even the past development was needed to be "forecasted".

[23] This concept should denote the "complex system-seecific relationships between qualification an jobs". In the qualification space "vocational qualifications are used by employers to organize jobs and to allocate persons among them" – the alternative concept of the institutional context is the organizational space which makes more use of internal labour markets (Müller/Shavit 1997, 4). Müller W / Shavit Y (1997) The institutional embeddedness of the stratification process. In: Shavit Y / Müller W, Eds. From school to work. A comparative study of educational qualifications and occupational destinations. Oxford: OUP, 1-48.

Two procedures for forecasting at the national level are regularly provided for sub-sectors of the system: (1) a yearly updated projection of the market for apprenticeships and the supply of completers, and (2) a mainly supply oriented forecast of the higher education system, which takes the university sector as its main focus. However, both focus on demographic trends and the supply side and do not observe employment structures or the demand for skills in the different sectors. Interestingly, this lack of formal information has rarely been expressed as a serious deficiency by the actors involved. Since the late 1980s, there has been a kind of "institutionalised agnosticism" concerning quantitative information and forecasting in the area of skill supply and demand, even in the expert community of economic and social research.[24]

3.1.3 Informal procedures predominate

3.1.3.1 Practitioners task forces

Numerous informal procedures for the generation and exchange of information about skill supply and demand exist at various levels of the VET. Various kinds of practitioner task forces are used as the main method of anticipation. Most work informally in three respects: (1) the composition of members is determined on an informal basis, (2) they use informal information, and (3) they make decisions in such a way that their observations are only superficially documented, if they are recorded at all. The task forces are primarily situated at the level of specific segments of the VET; only a few exceptions can be found on a comprehensive level. They are the following:

The Council for Economic and Social Affairs, the expert organisation of the social partners, has organised two task forces designed to address qualification issues ("Qualification 2000" in 1988-89, and a follow-up report in 1996-97), which developed recommendations for VET policy.[25]

More recently, a task force for the assessment of educational policy was implemented by the ministry of education. However, it did not focus on the VET system.[26]

In order to support European policy initiatives, a set of specific task forces has been in place as part of the debate surrounding the Memorandum for Lifelong Learning[27]. As

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[24] Beirat für Wirtschafts- und Sozialfragen (1989), Qualifikation 2000, Vienna: Ueberreuter; Beirat für Wirtschafts- und Sozialfragen (1997), Beschäftigungspolitik, Nr. 72, Wien 1997. See also http://www.sozialpartner.at/ (12.12.2005)

[25] See the results: Beirat für Wirtschafts- und Sozialfragen (1989), Qualifikation 2000, Vienna: Ueberreuter; Beirat für Wirtschafts- und Sozialfragen (1997), Beschäftigungspolitik, Nr. 72, Wien 1997. See also http://www.sozialpartner.at/ (12.12.2005)

[26] See: http://www.bmbwk.gv.at/schulen/unterricht/prinz/Zukunftskommission9733.xml (12.12.2005).

[27] See: http://www.lebenslangeslernen.at/ In the course of this activity a workshop on foresight activities in Austria took place, see: Koordinationsbüro für lebenslanges Lernen (2001) Ergebnisprotokoll des Koordinationsworkshops Erkennung und Erhebung des Qualifikationsbedarfs (Endfassung) 22. November 2001, Wien: BMBWK. Internet: http://www.lebenslangeslernen.at/downloads/WS_QB_Protokoll.pdf

a part of the Lisbon-follow-up process, a group of Austrian experts has been established although it does not focus extensively on VET issues.

Currently (2005/06), a task force in status nascendi is being formed in order to aid the development of a strategy for lifelong learning in Austria.

3.1.3.2 Formalised frameworks that use informal methods

Several formalised frameworks related to the anticipation of skill needs exist in certain sectors of the VET as exceptions from the main informal method. However, anticipation and foresight is not their main task:

The most outstanding formal framework is a national council responsible for quality assessment in the polytechnic sector (the Fachhochschulrat)[28] which, as one of its tasks, governs the assessment of skill needs. Assessment is a required element of the programme accreditation process. In this area, skill needs are assessed using detailed surveys and combined methods.

A partly formalised system which performs tasks related to anticipation exists in the apprenticeship sector. There, a set of councils are in place at national and regional levels in order to assess the demand for new or changed apprenticeship programmes and to make recommendations for reforms to the ministry. New occupational profiles in apprenticeship training have to be appraised by the federal council for apprenticeship training (Bundesberufsbildungsbeirat) and decisions are then made by the minister. The main focus is on the qualitative level, i.e. negotiating proposals for new or changed apprenticeship occupations. Specific practitioner task forces are temporarily set in place to survey information in order to prepare for plenary sessions (for a more detailed description, see Steiner 2005, 135-144).[29]

Between 1993 and 2003, a national council was in place in the university sector for monitoring purposes (Universitätenkuratorium)[30]which has since been abandoned due to decentralisation caused by recent reforms. Among its main tasks was the overseeing of evaluation procedures such as the appraisal of study programmes, the development plans of universities, and the appointment of professors. The council was also a practitioner task force that included leading industrialists, academics from abroad, and academics from Austria. One of the council's first main projects was the development of a data warehouse for Austrian universities, in order to collect necessary information. However, to what extent the anticipation of skill needs was considered in the work of the council is unclear.[31] The university reform of 2002 established a council

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28 See: http://www.fhr.ac.at/

29 Steiner M (2005) Qualitativ-praktische Aspekte der Antizipation. In: Lassnigg/Markowitsch, 123-178.

30 See: http://www.bmbwk.gv.at/universitaeten/recht/gesetze/uog03/Bundesgesetz_ueber_die_O4313.xml#83

31 An internet search on related concepts does not produce any significant results. For example, in the recommendations of the council regarding the evaluation of engineering programmes the question does not play any role and the word for graduate does not even appear in the document; see http://www.weltklasse-uni.at/upload/attachments/52.pdf; for information on the data warehouse see:

(Universitätsrat) of external experts for each university which, among other key controlling and strategic functions, was responsible for approving the development plan of the university. The members of the council were a mixture of managers and academic experts.[32] For general monitoring of the Austrian university system, a new federal council was established (Österreichischer Wissenschaftsrat) which also has anticipation functions.[33] The future will show how these institutions cope with the questions of foresight and anticipation of skill demand.

In the various formal frameworks, mainly informal methods have been used for the assessment of skill needs within formal structures.

3.1.4 Recent developments and summary

As mentioned above, there are several formal national procedures in place in certain segments of the system, mainly in higher education and apprenticeship. However, foresight and anticipation does not play a major role in the various tasks of these institutions. In full-time VET schooling, the technocratic approach is almost completely lacking and professional-political activities are confined to different sub sectors (engineering, business, services). The main procedures are informal periodical task forces working on updating curricula. More recently, the use of formal evaluation methods has been strengthened in this area.

At the same time, attempts to decentralise curriculum elements in individual institutions are in place, which automatically leads to increased regionalisation. In addition, there are different profile activities in place at the regional level. The Länder, as the administrative unit of a region, has particular responsibilities for apprenticeship and has also engaged in the polytechnic sector. They are involved in the regional councils' apprenticeship, and in most regions' development plans for regional polytechnics (most of which are quite simple and supply oriented). Some of the regions have set up more comprehensive attempts towards formalised anticipation systems that include both technocratic and professional-political activities. Two of these cases are described in greater detail below.

In sum, comprehensive assessments of skill needs at the national level are weak on both technocratic and professional-political levels. Technocratic activities mainly use projection techniques, and the main method for assessing professional-political activities is practitioner task forces. There are marked differences in certain segments of the system, and in different regional units. In higher education, particularly in the polytechnic sector and in apprenticeship, formal arrangements for the assessment of skill needs exist to some degree, and some regions have started to set up more formalised, comprehensive anticipation systems. The polytechnic sector is outstanding, as formal assessment of skill needs at the programme level is a required element of the accreditation process. This involves the use of detailed surveys and combined methods.

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http://notes.wu-wien.ac.at/usr/rektorat/memos/wumemo27.nsf/3c0044abd66579618025648b004d098e/d9e8d3273776efdd412568b7004d8b49?OpenDocument

[32] See: http://www.weltklasse.at/upload/attachments/944.pdf; http://www.bmbwk.gv.at/medien/8753_alle_uniraete.pdf

[33] See: http://www.wissenschaftsrat.ac.at/english/default.htm; http://www.unigesetz.at/html/cont_gesetzestext.asp?ID=19879

Thus, overall there is currently a lack of procedures for foreseeing or even monitoring the development of the overall VET system in terms of the future demand for competences.

3.2 Stylised communication flows among players

A set of actor categories has been distinguished in order to facilitate analysis of the Austrian anticipation system:

- Education and training providers: school management and school partnership institutions of full-time VET institutions; part-time VET schools; providers, management, development teams, polytechnic programme managers; providers of adult education and training.
- Labour market actors: apprenticeship training enterprises, enterprises in general, people demanding education and training.
- Interest organisations: chambers of commerce; chambers of labour; polytechnics teachers' council; adult education providers' council.
- Intermediary or buffer organisations: public employment service; apprenticeship councils; polytechnics council.
- Public institutions and politicians: the ministry of education, science and culture through its VET directorate and specialised departments, department of adult education; the ministry of labour and economic affairs; regional and local governments and administrations.
- R&D institutions and counselling services: centres for school development; various research institutes.

The public employment service (AMS) plays a key role in the anticipation system as most of the comprehensive technocratic activities are commissioned by this institution. These foresight activities are shaped by the specific purpose and perspective of the AMS, which is oriented towards short term labour exchange and the updating of qualifications through labour market training. This institution is also not included in professional-political foresight activities, which are mainly guided by the ministry for education, science and culture. An exception is apprenticeship training which is also governed by the ministry of labour and economic affairs and the social partners involved: here the public employment service is responsible for the apprenticeship market and providing monitoring figures and yearly forecasts.

Table 1 Number of outgoing and ingoing formal communication linkages for different actor categories

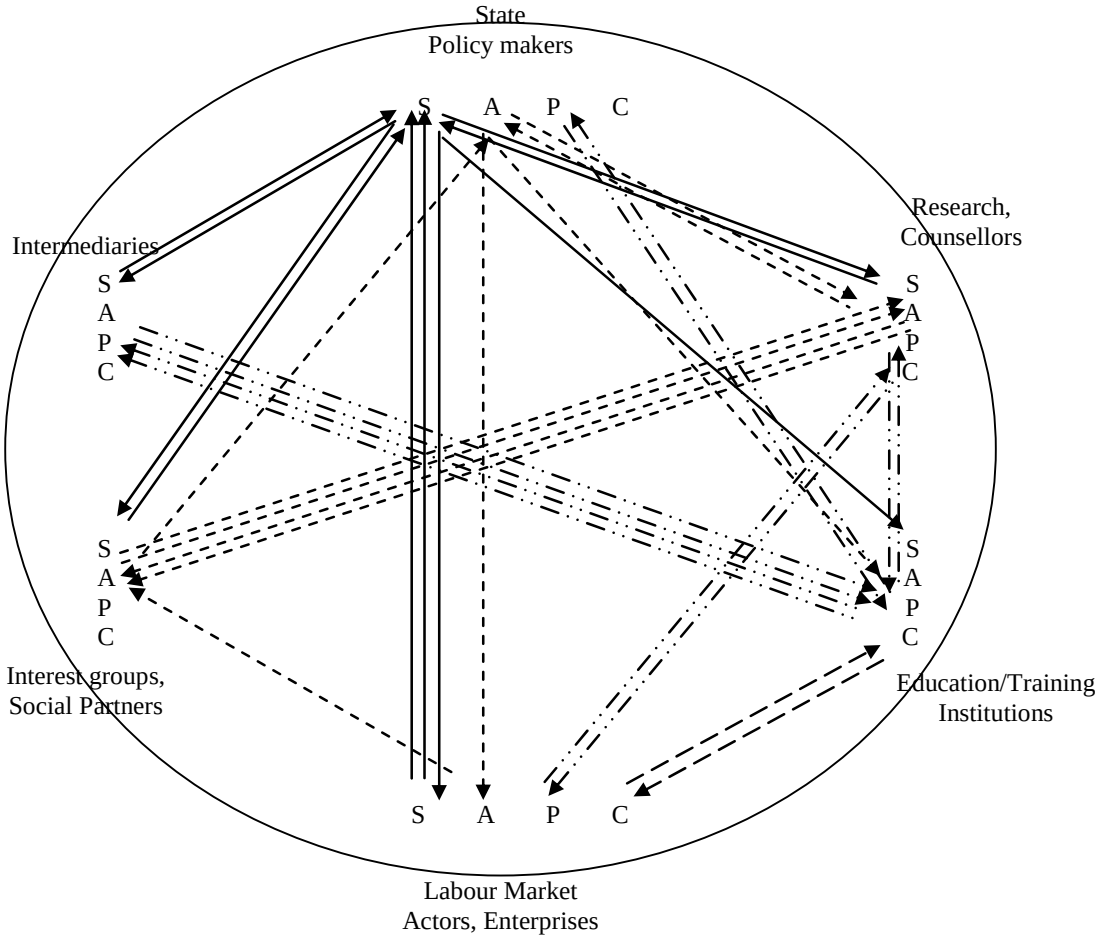
	Number of linkages		
	total	outgoing	ingoing
Public institutions and politicians	17	9	8
Education and training providers	12	5	7
R&D institutions and counselling services	12	6	6
Labour market actors	9	5	4
Interest organisations	8	4	4
Intermediary or buffer organisations	6	3	3

We can see that, at the overall composite level, state institutions and policy makers, R&D-institutions, and education and training institutions are the main nodes in the communication system. Labour market actors, interest groups, and intermediaries are less strongly involved in the communication flows. Table 1, which summarises the number of linkages per actor, also shows that there is a rather balanced structure of outgoing and ingoing linkages. Three actor groups exhibit an even number of linkages, public and labour market actors act more frequently as senders, and ET institutions act more frequently as receivers in the formalised communication system.

In figure 4, the main formalised communication flows in the Austrian anticipation system are summarised in a stylised manner. This figure is derived from more detailed analyses outlined in a chapter by Henkel and Markowitsch (2005).[34]

[34] Henkel S / Markowitsch J (2005) Analyse der Kommunikationsprozesse in vier Berufsbildungsteilsystemen. In: Lassnigg L.; Markowitsch J. (eds.): Qualität durch Vorausschau. Antizipationsmechanismen und Qualitätssicherung in der österreichischen Berufsbildung. Innsbruck-Wien: StudienVerlag. 31-75.

Figure 4 Stylised communication flows in the Austrian anticipation system

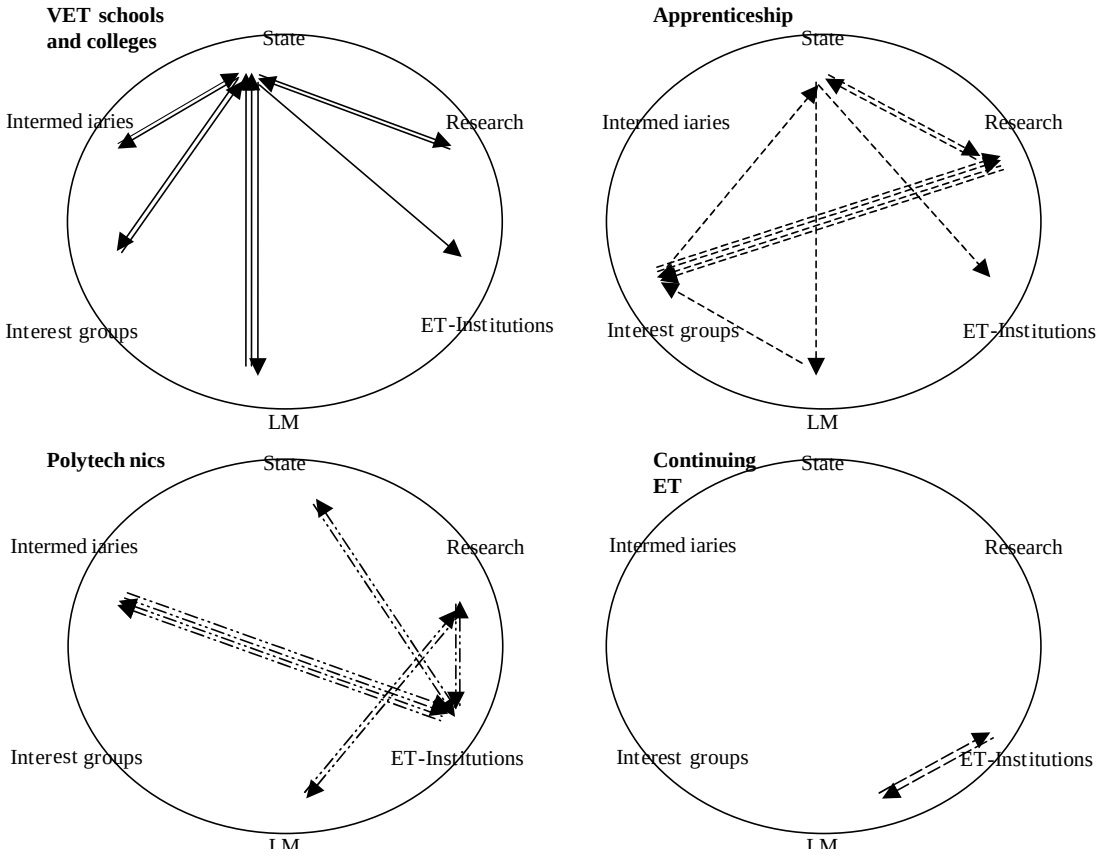


Legend:
S = Full timeVET schools and colleges
A = Apprenticeship system
P = Polytechnic sector
C = Continuing education and training

Source:
Structure by the author, based on Henkel/Markowitsch 2005

However, if we draw a distinction between the different subsystems of education and training, we can see very different communication structures in those subsystems (Figure 5). In fact, there are also different subsections in the broad categories of actors involved – thus, e.g., the state players are not the same for VET schools, apprenticeship, polytechnics, and continuing education and training. The relation between formal and informal communications structures also differ between the subsystems.

Figure 5 Stylised communication structure in Subsystems



Source:
Structure by the author, based on Figure 4 derived from information provided in Henkel/Markowitsch 2005

The federal ministry plays a key role in full-time schooling as a kind of gate keeper in the formal communication system, and strong relationships between ET institutions and labour market actors at the informal level cannot be seen in the formal communications system. In apprenticeship, interest groups and research institutions play the key role in the formal communication system and, overall, the system is more interactive and connected. Proposed occupational profiles are evaluated by a body of the social partners and are further developed by a research institute attached to the economic chamber. In the polytechnic sector, the ET institutions are the main node in the communication system. Finally, in adult and continuing education, the formal communication system is rather rudimentary, as the only connection between institutions and labour market actors is made via feedback mechanisms.

3.3 Methods, instruments, and tools for the anticipation of future skill needs in Austria

In this section, some of the main activities in the Austrian anticipation system are described in greater detail. First, technocratic (3.3.1.) and professional-political (3.3.2.) strands of anticipation are discussed. Finally, (3.3.3.) selected regional approaches are described.

3.3.1 Selected technocratic methods

Regular economic forecasting in Austria does not specify detailed categories of qualifications or occupations within the employment structure. In fact, only a short overview of those activities is provided. Detailed forecasting activities linked to the future development of employment and qualification structures in the technocratic strand have only been performed by isolated research projects, in most cases commissioned by the public employment service and the social partners involved. These activities have focused on the short-term development of the overall labour market and, consequently, the specialised qualifications provided by the VET system have not been covered sufficiently. The main categories used are economic sectors, education and training levels, and occupations. Skills are frequently "measured" indirectly using broad occupational categories.

3.3.1.1 Short-term and medium-term regular macroeconomic forecasting and micro-prognosis of the labour market.

Since the early 1970s, the two main institutes of economic research have performed a quarterly update of economic forecasts on a macro level that includes, apart from the main economic indicators, forecasts of the overall figures of employment and unemployment. Five-year medium-term forecasts regarding these macroeconomic indicators are provided once a year. However, these exercises do not include figures on economic sectors, industries, occupations, or qualifications.

Based on data from social security records, the unemployment security agency, and the labour exchange and taking into account macroeconomic forecast procedures, a micro-prognosis of the labour market has been developed since the mid 1990s which provides short-term (one year) and medium-term (five year) prognoses for employment and unemployment. This activity is based on a very rich database and includes disaggregated estimations according to region, sector, gender, age group, formal qualification levels, different socio-economic traits, and enterprise characteristics. More recently, a regional monitoring system has also been incorporated into the approach

which measures skill gaps and excess unemployment on the basis of the structure of the staffing of vacancies (Alteneder et al. 2004).[35]

Since the mid 1970s, an annual short-term forecast of the apprenticeship market has been performed by the Austrian labour market service (AMS). The forecast includes longer-term projections of inflow into apprenticeship and of the supply of trained workers, and takes into account gross economic figures on the demand side as well as demographic change and participation rates in upper secondary education on the supply side.

3.3.1.2 Long-term and medium-term forecasts and projections of sector, occupational, and qualification development.

No comprehensive exercises been performed regularly on the levels of sectors, occupations, or qualifications, on either time-scale. Some specific, large-scale research projects have been commissioned to forecast medium to long-term development, about one or two projects per decade, with a tendency to decreasing time scales and decreasing research ambition. These projects have been grossly isolated from each other, employ different methodologies, and have learned little from past experience. Systematic follow-ups of earlier studies have also been rather sparse (see Markowitsch et al 2005, Lassnigg 2002).[36]

Since the 1980s, two kernels of forecasting activities at the level of qualifications and occupations have emerged – one at the Austrian Academy of Science, which is grouped around a regular forecast of the higher education system and mainly oriented towards the supply side, and one grouped around economic forecasting activities at WIFO and IHS.

An update of the forecast of higher education studies is commissioned every three years by the (now former) Ministry for Science and Research. However, the study concentrates on the supply side, providing a break-down of university studies by subject. Moreover, it relies on very broad categories of educational levels (but does not distinguish individuals undergoing an apprenticeship from the unqualified), and only includes supply-oriented projections of the population's educational structure occasionally.

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35 Alteneder W / Kalmár M / Löffler R / Prammer-Waldhör M / Wagner-Pinter M (2004) Engpässe und Überhänge als Herausforderung an die Arbeitsmarktpolitik. Prognose der Engpässe und Überhänge auf Österreichs regionalen Arbeitsmärkten für 2004 und 2005. September. Endbericht. Bericht an das Arbeitsmarktservice Österreich. Vienna: Synthesis Forschung. Internet: http://bis.ams.or.at/forschungsnetzwerk/images/Synthesis_analyseband2004-05.pdf

36 Markowitsch J / Plaimauer C / Humpl S / Lassnigg L (2005) Forschungsgestützte Ansätze der Antizipation: Qualifikationsbedarfsanalysen in Österreich . In: Lassnigg / Markowitsch 2005, 77-122.

Lassnigg L (2002) Projections of qualifications and occupations in Austria: Short-term approaches, macro perspective and emphasis on the supply side. In: Neugart M / Schömann K, eds. (2002) Forecasting labour markets in OECD countries. Measuring and tackling mismatches. Cheltenham: Elgar, 240-282.

3.3.1.3 A comprehensive information platform regarding demand trends in the labour market: Qualifikations-Barometer

The public employment service has provided a comprehensive information base on the internet called the "Qualifikations-Barometer"[37] that includes detailed information about the actual labour market situation and stylised trends regarding occupational characteristics. On the one hand, it differentiates between approximately 25 broad occupational areas, e.g., tourism; 130 more specialised occupational fields, e.g., education and care for children; and 700 occupations, e.g. saleswoman for textiles. On the opther hand, it distinguishes between different competences (about 200 detailed competences, differentiated by occupation specific expertise, e.g., event management, and generic skills, e.g., humour) (see Markowitsch et a. 2005, 108-110).[38]

The platform describes basic employment trends at the level of occupational areas, and gives more detailed information about the weight and development of specific occupational fields and occupations within the broader areas as well as the competences needed for work in those areas. Basic information is also available from written reports which are updated periodically (e.g., AMS Austria 2004).[39] Figures on vacancies and job seekers from the public employment service are also included in the information base. Information is also available for regional areas, at the Länder level.[40] However, there is no direct linkage to the system of formal qualifications included in the Barometer since it relies entirely on the classification of competences. Furthermore, several sources of information indicated for each occupational area, e.g., studies or statistical sources. In addition, further links between the Barometer and the separate occupational information system (Berufsinformationssystem) of the public employment service.[41] This system includes links to several sources of information about occupational grouping, formal education, continuing education, and web based guidance material.

In sum, there is a great deal of detailed information available, however, it is difficult to use this material for the purpose of planning or policy making at a more aggregate level. The Barometer is regularly updated on the basis of two kinds of sources: analyses of job advertisements and, more recently, employer surveys. Those kinds of studies are used on the micro level, mainly to get information about the competences needed. However, there has been no linkage established so far to macro-level analyses, which is envisaged for the future.

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37 See: http://www.ams.or.at/neu/2339.htm; se also a short description in German: http://www.ams.or.at/images/pdf/forschung/info65.pdf

38 Markowitsch J / Plaimauer C / Humpl S / Lassnigg L (2005), Forschungsgestützte Ansätze der Antizipation: Qualifikationsbedarfsanalysen in Österreich. In: Lassnigg L.; Markowitsch J. (eds.): Qualität durch Vorausschau. Antizipationsmechanismen und Qualitätssicherung in der österreichischen Berufsbildung. Innsbruck-Wien: StudienVerlag, 77-122.

39 AMS Austria (2004) Qualifikationsstrukturbericht des AMS Österreich für 2003. Ergebnisse des AMS-Qualifikationsbarometer. Vienna: Arbeitsmarktservice Österreich. Internet: http://bis.ams.or.at/forschungsnetzwerk/images/Qualifikationsstrukturbericht_2003.pdf

40 For more detailed information about the regional structure, see chapter 3.3.3. below.

41 See: http://bis.ams.or.at/

3.3.2 Selected professional-political and practical methods

Since the late 1980s, qualitative approaches which make use of figures in an interpretive way rather than utilising rigorous modelling have flourished for the purpose of planning and evaluation in specific qualification and occupational fields, as well as in certain geographic regions. An overall expert study was published by the advisory committee of the Austrian social partners in 1989, which questioned the sustainability of forecasting in the area of qualifications on the grounds that change and the fluidity of demand are accelerating.

It the beginning of the 1990s, the Fachhochschule (FH) framework was established as a new sector in the Austrian education and training system with a professional accreditation model at its core. The accreditation and re-accreditation procedures for each programme require – aside from several other items – an independently performed study regarding the labour market demand for the qualification profile projected in the new programme, as well as acceptance of the profile by the prospective student population. Thus, since the mid 1990s, roughly 300 specific studies on the qualification areas proposed for FH programmes have been performed. However, they have yet to be integrated into an overall framework of statistical information.

More recently, due to a broad reform process at universities, similar mechanisms for the assessment of the usefulness of study programmes in terms of demand at the employment side have been implemented (Mayer/Lassnigg/Unger 2000).[42]

Another strand of foresight activity development, mainly on a qualitative level, has evolved since the mid 1990s in the form of various policies supported by the European Social Fund (ESF). These studies have used stakeholder round tables and prospective surveys among enterprises as methods of foresight. A large technology foresight study employing the Delphi method was conducted in the mid 1990s in order to identify the fields most capable of rapid innovation and technological change in Austria (BMWV 1998).[43] One of the areas included was the field of life-long learning.

We have shown above that formal anticipation practices are lacking in Austria. In the following subsections, we examine the practical professional-political strand of anticipation in greater detail in order to determine how aspects of future skill needs are brought into the decision making process regarding new programmes and new sites of provision. We do this for two selected sectors of the Austrian VET system: the long standing, traditional sector of VET colleges and the new sector of polytechnics. Emphasis is also placed on determining how the regional level is involved– at least in status nascendi – in activities which produce foresight about skill needs in order to simplify the process of planning VET programmes.

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42 Mayer, K., L. Lassnigg and M. Unger (2000), 'Social dialogue on training. Case study Austria', IHS-Research Memorandum, commissioned by CEDEFOP, Vienna (Download: http://www.equi.at/en_fs_projekte.htm > qualification).

43 BMWV (ed.) (1998), Delphi Report Austria, Institut für Technikfolgen-Abschätzung, Österreichische Akademie der Wissenschaften, Vienna.

3.3.2.1 Practical anticipation strategies in the subsystem of VET colleges

In the full-time schooling sector, final decisions about the structure and provision of programmes are made at the federal level. Consequently, state institutions are the main node in the formal communication process. However, several informal mechanisms exist which bring the regional level into the process. One example is the industry and engineering related sector of the VET colleges, where teachers at regional sites and programmes are the key actors in the development of new programmes. Three different mechanisms that include elements of informal anticipation can be identified: ongoing communication flows between schools and industry, the development of new programmes, and the periodic updating of curricula.

In regards to the first mechanism, there are four basic channels which organise communication between the enterprise sector and institutions:

1. The double-engagement of teachers: Teachers must have work experience in industry, and many of them work partly at school, and partly in industry.
2. Development projects in conjunction with enterprises: Schools work in many development projects with enterprises, and final examinations can be used as project presentations.
3. School-industry boards (Kuratorien): The codetermination bodies of schools can be run as school-industry boards which include key persons from regional industry.
4. Meetings between school personnel and representatives from employer organisations of the respective field (Fachverband)

These linkages provide many occasions for the ongoing exchange of information between schools and related industries, which can be integrated into day-to-day teaching and learning activities. There is also much room for the regular adaptation of programmes, as curricula are rather loose frameworks (Rahmenlehrpläne) which can easily be adapted. Up to 50% of the content is decided at the individual site, 20% as part of autonomous decision-making, and the rest is also open to selection and decision making by individual teachers because of the loose regulation of the content.

The second mechanism for developing new curricula differs by education and training field. The industry and engineering related sector is much more specialised than business or tourism. About 240 specialised programme profiles are provided, some of them only at a single site. Changes to curricula are in most cases set in motion at the regional level. The process proceeds through four steps: (1) teachers from a region develop a new qualification profile and submit it to the responsible department in the ministry; (2) a consultation among teachers from other sites in the programme field is organised; (3) if the results of this communication are positive, a meeting with representatives of industry takes place with formal involvement by employer organisations (Wirtschaftsgespräch); (4) formal appraisal procedures are used which include a broad variety of actors (public institutions, social partners, churches, parents' organisations, research institutions, etc.) and the amendment of the curriculum by the minister. In this process, anticipation of the need for new qualifications is considered in informal ways, mainly via the expertise of the teaching personnel, experts in the

ministry, and individuals in related industries. However, formal knowledge from research is not used in this bottom up process. To make things easier, new pilot curricula (Schulversuche) can be developed at certain sites.

The third mechanism for periodically updating curricula is organised at the federal level. It takes place roughly every ten years.

In industry related fields, this process is similar to the specific initiatives described above. In the electronics field, a yearly 3-day informal seminar on curriculum development (Lehrplanseminar), led by experts, has been organised for the last 15 years. The seminar is incorporated into teacher education and brings together 1-3 key persons from each school that have programmes in electronics. The challenges and problems of curriculum development, as well as ideas for new initiatives, are openly discussed. Experts from the ministry and from industry also participate and contribute their views. Since this initiative is considered to be highly effective, the ministry is planning to implement it in all programme fields.

In other fields (business, tourism, etc.) that do not involve such specialised curricula, the periodic updating of curricula follows a different, more centralised path which goes through five steps: (1) the starting point is a consultation between the ministry and the regional inspector of the respective field which formulate the overall goals and the basic timetable of the new curriculum; (2) various groups of teachers (composed of approximately five people) develop the content for groups of subjects; (3) those proposals are synthesised by the responsible department in the ministry and sent out to each school for comments and feedback; (4) the comments are reviewed by the ministry and the results are passed through broad formal assessment procedures that include the social partners; (5) the comments gathered in this procedure are also included and the results are amended by the minister. A new procedure introduced in the latest update is a formal external evaluation of the curriculum which provides the new basis for the first stage. The evaluation provides information from graduates, human resource personnel in enterprises, and personnel in the education sector (teachers, principals, and inspectors) regarding their experience with the ongoing curriculum and their perspective on new demands and skill needs at the qualitative level.

In sum, there are various linkages in place between education and industry which provide qualitative information on the demand for competences on a short- and medium-term time scale. However, anticipation procedures are primarily situated within the structures of the system, operating from the bottom up. A key issue is competition among schools for students. Informally and via indirect channels, demands from industry have begun to enter the process of programme development. Although there is a clear view in the ministry that VET colleges should provide their students with a sustainable basis for their employment career, an immediate adaptation to each short term demand is not construed as a primary goal.

The overall structure of the system in itself, e.g., the distribution of students by programme fields, is very much driven by student interests and choices, not by planning and anticipation.

3.3.2.2 Polytechnics

With the establishment of the polytechnic sector of higher education (The Austrian Fachhochschule) regional policy makers became active players in higher education policy. However, this did not occur by establishing legal or administrative responsibilities but by assuming the role on a voluntary basis in a deregulated model of steering the new sector. The polytechnic sector has been set up via an accreditation model, which includes a strict bottom-up strategy. Study programmes can be submitted by various actors, and have to be accredited by a council according to a set of legally defined criteria. As a separate procedure, the federal government pays the providers a predefined amount per-capita for every student in the polytechnics. The basis for the funding is a five year development plan which defines the number of student places and some broad priorities. In fact, although when it was first initiated some private funding was also expected, all places are now funded through this mechanism. The total per student only covers about 90% of the estimated costs and investments for infrastructure are not included in the federal financing, which requires the providers to acquire additional money.

In Austria, regional governments have adopted a supporting role in the process in different ways and to varying degrees: some act as providers, some provide various kinds of financial or material support, while othrers engage very little in the polytechnic sector. This has required some regional planning, and the identification of appropriate sites for the new institutions and decisions concerning the expected magnitude of the new sector have been key issues. The regionalisation of higher education has also been one of the main goals in the development of the new sector.

Different regional strategies were analysed extensively in a review of the development of the Austiran polytechnic sector (Lassnigg et al 2003, Ch. 5). It was shown that a duality exists between strategy-based rational planning and more voluntaristic political negotiations. The regional governments had to decide among the local communities which were competing to host a polytechnic institution. Because federal development planning has opted for a moderate growth process, the first round of distribution was in fact crucial in setting the scene for regional distribution. Those who were quick in submitting reasonable proposals and who made the decision to invest in infrastructure have won the race. Due to loose selection criteria, an uneven structure of sites has developed in terms of size and academic aspiration. After several years, the opening of new sites was deliberately restricted by the quality criteria established by the council for accreditation.

As a result of the policy, very different structuring of the polytechnic sector can be observed in the Länder. However, this is more a consequence of accidental processes than of deliberate policy decisions. The main debate has centered around the amount of

support that should be provided and the basis on which the first sites should be selected. Players within the polytechnic sector were of major influence. Consequently, it appers that the amount of regional support provided is only one factor related to the development of polytechnic institutions: some of the strongest institutions are situated in regions that only make moderate contributions to the new sector.

3.3.3 Selected regional approaches

Qualification policy is mainly a federal responsibility in Austria. Regions are defined based on the administrative structure of the nine Länders, which are rather small in scale. The regional level is involved in innovation policy, and has resulted in the establishment of several regional innovation centres.

The nine Länders differ in size and composition: two are very small (about 300.000 inhabitants and 3.000 square kilometres), three are a bit larger, and even the four largest regions (including Vienna which is also an own administrative unit at this level) are comparatively small (about 1.5 Million inhabitants and around 15.000 square kilometres). Small size has led to rather intense inter-regional economic linkages (e.g., Vienna is located within Lower Austria).

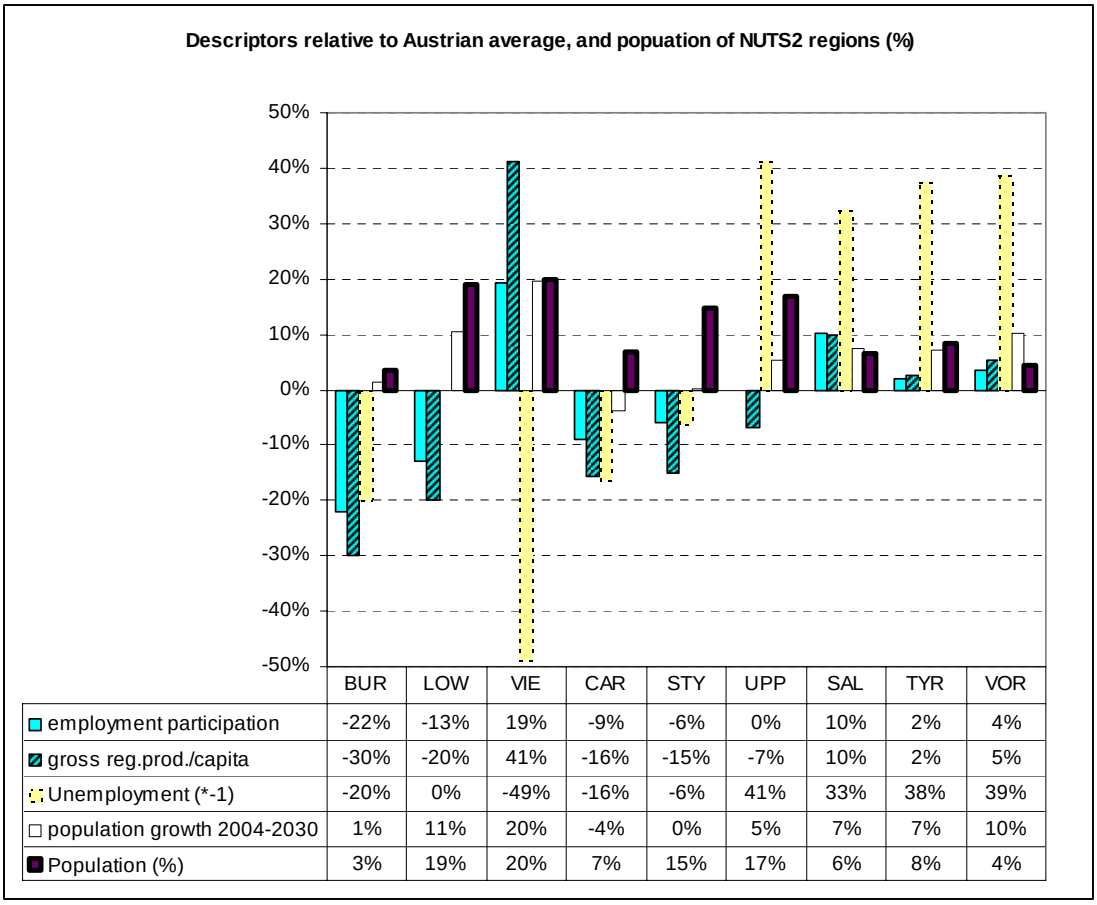
Table 2 Descriptors of Austrian *Länder*

NUTS Code	Region	Population (absolute)	Population (relative)	Employment (absolute)	Employment participation (relative to Austrian average)	Gross regional product per capita	Relative population growth 2004-2030	Unemploy-ment rate (relative to Austrian average)
AT1	EAST	3.474.200	42%	1.616.800	100%	97%	114%	128%
AT11	Burgenland	278.200	3%	100.800	78%	70%	101%	120%
AT12	Niederösterreich (Lower Austria)	1.569.600	19%	630.400	87%	80%	111%	100%
AT13	Wien (Vienna)	1.626.400	20%	885.600	119%	141%	120%	149%
AT2	SOUTH	1.757.400	21%	760.900	93%	85%	99%	109%
AT21	Kärnten (Carinthia)	559.900	7%	237.500	91%	84%	96%	116%
AT22	Steiermark (Styria)	1.197.500	15%	523.400	94%	85%	100%	106%
AT3	WEST	2.974.800	36%	1.412.200	102%	103%	107%	61%
AT31	Oberösterreich (Upper Austria)	1.396.200	17%	646.400	100%	93%	105%	59%
AT32	Salzburg	526.000	6%	268.000	110%	110%	107%	68%
AT33	Tirol (Tyrol)	691.800	8%	325.300	102%	103%	107%	63%
AT34	Vorarlberg	360.800	4%	172.500	104%	105%	110%	61%
AT	Austria	8.206.500	100%	3.790.700	100%	100%	108%	100%

Source: Information compiled by the author based on various sources

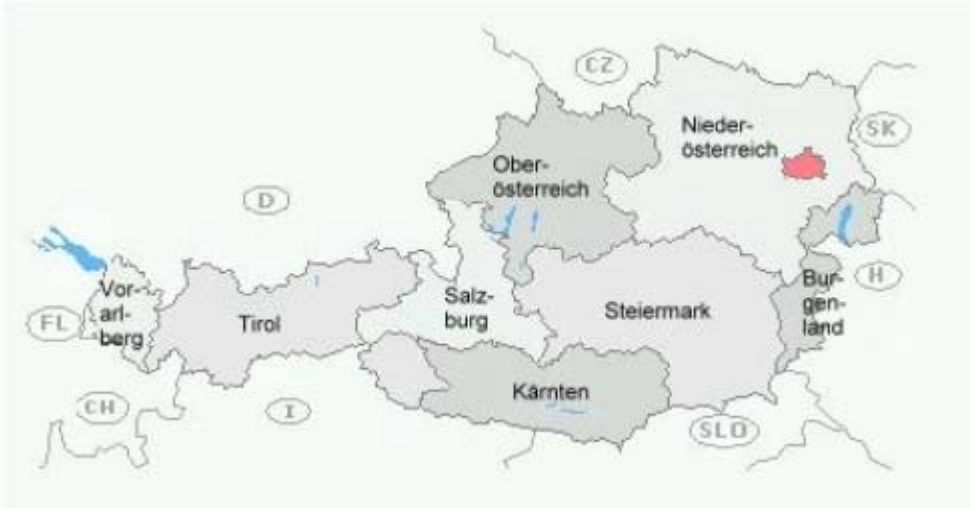
There are certain regional differences in economic activity, with a more favourable situation in the West, and a less favourable situation in the South. The eastern part of the country shows a mixed picture with high productivity and high unemployment in Vienna. The stylised illustration below demonstrates the marked differences that exist between the regions.

Figure 6 Stylised descriptors of Austrian Länder



	BUR	LOW	VIE	CAR	STY	UPP	SAL	TYR	VOR
employment participation	-22%	-13%	19%	-9%	-6%	0%	10%	2%	4%
gross reg.prod./capita	-30%	-20%	41%	-16%	-15%	-7%	10%	2%	5%
Unemployment (*-1)	-20%	0%	-49%	-16%	-6%	41%	33%	38%	39%
population growth 2004-2030	1%	11%	20%	-4%	0%	5%	7%	7%	10%
Population (%)	3%	19%	20%	7%	15%	17%	6%	8%	4%

Figure 7 The geographic location of the Austrian Länder



Source: http://www.efmn.info/guides/CGRF-Austria.pdf, 29

In terms of responsibilities, the Austrian education and training system is rather complex. There are divided responsibilities in the school sector, and federal decision making power increases dramatically towards the later "downstream" phases of

education and training pathways. The responsibilities for organizing full-time VET and higher education are mainly situated at the federal level, whereas in the apprenticeship sector individual regions take on more responsibilities. In labour market policy, there is decision-making power at the regional level within the federal public employment service. This means that education and training policy on the one hand and employment policy on the other are to some extent executed at the regional level, however, the organisations involved are not interlinked.[44]

In the following section, we look more deeply into the selection procedures and practices that contribute to anticipation in two neighbouring regions. Two different cases of regional education and training policy are presented, which include more or less elaborate approaches towards the anticipation of future skills demand. Those approaches differ greatly due to divergent structures and strategies. We will see that anticipation in both regions is very much linked to regional innovation policy, however, in quite different institutional forms, and with very different consequences for education and training. The reason for this linkage may lie in the way responsibilities are structured. Regional innovation policy is quite developed in Austria, and the Länder governments are key players in this policy field.

Both regions are among the largest in Austria, with about 1.5 Million inhabitants. Lower Austria (Niederösterreich) is situated in eastern Austria, with a long border to new member states (Czech Republic and Slovakia) and is clearly linked to the metropolitan area of Vienna which is geographically located within this region. More recently, initiatives designed to promote integration have been introduced by creating the "Vienna Region" which includes the three Länders of the East, and by creating a new trans-national region in central Europe called the "Centrope Region", which includes the Vienna Region and neighbouring regions in The Czech Republic, Slovakia and Hungary.[45] Lower Austria is one of the most significant industrialised regions in the country. Roughly 20% of all industrial production takes place in Lower Austria, compared to about 19% of the population. In the recent past, Lower Austria has been at the top of the list of provinces with the strongest growth. This ranking is based on production and export performance. The relocation of production sites from Vienna to the bordering hinterlands is also considered to have had a positive influence on Lower Austria's economic development. Moreover, great differences exist within the region (e.g., The "Wiener Umland Süd" has a gross regional product per inhabitant of 125% and is one of the strongest regions in Austria, while "Weinviertel" is one of the weakest with less than 65%).

In terms of economic and labour market indicators, Upper Austria (Oberösterreich), located on the western border of Lower Austria, shows better figures (higher productivity and employment participation, lower unemployment). Large parts of this region belong to the most dynamic industrial regions of Austria. Upper Austria has been characterized as having the strongest economy of Austria's nine federal

[44] Lassnigg L (2004) National Social Dialogue on Employment Policies: Case Study Austria. Report commissioned by RILSA-Research Institute for Labour and Social Affairs on behalf of the International Labour Organisation. January 2004. Vienna: equi-IHS.

[45] See: http://www.cordis.lu/paxis/src/vienna_region.htm, and http://centrope.com/centropestart/

regions. With around 16% of the national population, Upper Austria provided 25% of total national exports in 2003, with two-thirds going to the Member States of the European Union. Part of the border is shared with the Czech Republic and another part with Germany (Bavaria).

3.3.3.1 The case of Upper Austria: anticipation implicit in various policies

In this region we can identify two different approaches, which are indirectly linked to each other through policy-making culture and certain actors. One approach is policy co-ordination that uses social partnership in active labour market policy in Upper Austria. The other is the deliberate inclusion of VET in the regional innovation strategy.

Policy coordination in active labour market training and regional forecasting

In this field, activities which are not explicitly and deliberately named as anticipation but are de facto related to it include two independent parts which are to some extent interlinked: an informal consultative body connected to the regional government and the regional public employment service (the Forum Aktive Arbeitsmarktpolitik), and a regional project aimed at forecasting skill demand and supply commissioned by the regional employees chamber which is part of the consultative body.

Figure 8 The geographic location of Upper Austria

Source: http://www.ooe2010.at/images/download_kurzfassung_inno2010_e.pdf

The Forum was initiated in the early 1990s by the member of the regional government who was responsible for economic policy in the regional government at that time.[46] Membership and cooperation is completely voluntary. There is no formal or legal basis, and there are no formal responsibilities for this framework, similar to the institutions of Austrian social partnership. However, the members of the Forum are decision-makers in their organisations, and thus have the power to implement agreements in their respective domains. They represent the three regional departments of economics, social affairs, and education, the regional branch of the public employment service (AMS), the social partners (two organisations from the employer side, and two organisations from the

[46] This leading person, Christoph Leitl, originally an industrialist in the region is currently the president of the Austrian economic chamber.

employees side), and the main providers of continuing training. In sum, 10-15 persons are present in the meetings which take place about every two months, or more frequently if necessary.

The Forum consists of open and problem oriented discussion of topics which are recognized as areas of the labour market where action is required. A pre-defined agenda does not exist. Rather, projects are proposed by the members and are circulated between meetings in order to find common ground for the definition of problems. If necessary, specific analyses are made by searching data and information bases to which the members have access. The public employment service plays an important role in supporting the operative business, and work together with the regional government in financing the projects. Solutions are often implemented and financed within the framework of active labour market policy. However, the regional government adds substantial means to the AMS budget.

The identification of problems originates in the day-to-day activities of the member organisations. Important sources for locating areas where action is needed are, for instance, the regular educational counselling activities of the regional employee chamber, and frequent visits to enterprises by representatives of the regional economic chamber. Other sources include the monitoring of demographic and labour market data.

The focus is on issues and problems which currently affect supply and demand in the labour market or are expected to in the near future. However, foresight of future problems is also considered. Examples of projects which are presently being developed and implemented by the Forum include:

- Due to the fact that demographic development shows that there will be an increased demand for training around 2008, additional programmes in the VET colleges have been developed which combine apprenticeship training and higher level competences
- Future skill shortages in the area of health and services for older people are estimated for the period 2010-15, and consequently arrangements for retraining adults (unemployed or upgrading of employed people) to fill this need have been developed.

The second part of anticipation in Upper Austria, the project commissioned by the regional employee chamber to forecast the supply and demand for skills, is also used as a source for the definition of projects in the Forum. However, the project also serves other purposes. It is used by the chamber as a source for developing their proposals for education and training policy, and as a source of information in educational counselling activities.[47]

The forecast is provided by the two main Austrian institutes for economic and social research (WIFO provides forecasts of the demand side and IHS provides forecasts

[47] See the information about education at website of the AK Oberoesterreich: http://www.arbeiterkammer.com/www-390.html; here you can find the forecasted figures about occupations: http://www.fwd.at/berufskompass/prognoseliste.php; here you can find the information about occupations and qualifications: http://www.arbeiterkammer.com/www-1424.html#

of the supply side).[48] The forecasting of regional skill needs on the demand side consists of three main components: the Austrian macro-model, a regional model, and a projection model of occupations (cf. Huemer/Mahringer/Streicher 2002).[49] (1) The macroeconomic model of the Austrian Institute of Economic Research (WIFO) for the mid-term forecasting of the Austrian economy is used as the basis for employment forecasts for 36 sectors. The model (cf. Kratena/Zakarias 2001)[50] combines econometric functions for goods and factor demand, prices, wages and the labour market with the input-output accounting framework. (2) A regional sector model, which is based on regional input-output tables and linked to the macroeconomic model, is used for projecting regional employment figures for different economic sectors. Regional mobility is also taken into account. (3) In the projection model for occupations, employment forecasts for different sectors based on the regional model are structured according to occupation. Data from the quarterly national survey are used to obtain employment matrices by sectors X occupations. These distributions are used to impose the occupational structure onto the forecasted employment by economic sectors. Based on these matrices, the relative distribution of occupational employment (the occupational distribution matrix) for each sector can be projected.[51]

In sum, the output of regional skill need forecasts provides time series data on overall and sector/regional employment in Upper Austria by NACE 2-digits, combined with 34 sectors based on cell size and national requirements, time series data on sector employment for each of 61 ISCO occupations (which are slightly aggregated due to cell size requirements), and a decomposition of the growth of occupational employment into distinct sector and occupational effects. Different projections are provided for men and women.

While the WIFO-model considers the demand side, the supply side is independently projected by the IHS, based on the regional demographic prognosis of Statistics Austria and flows and transitions within the education and training system. Dropouts at the various stages of the system are considered. Further education is not taken into account because of the lack of information.

The outputs of the supply forecast are time series data on the persons completing education and training for 8 aggregate and 44 field-specific qualification categories. The

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48 WIFO: Austrian Institute of Economic Research, see: http://www.wifo.ac.at/(en)/; IHS: Institute for Advanced Studies, Vienna, see: http://www.ihs.ac.at/

49 Huemer U., Mahringer H., and Streicher G. (2002): Berufliche und sektorale Beschäftigungsprognose für Oberösterreich. Methoden und Ergebnisse des regionalen Berufs- und Sektormodells für Obersösterreich, WIFO-Monatsberichte 11/2002.

50 Kratena/Zakarias 2001 Kratena K., and Zakarias G. (2001): Multimac IV: A disaggregated econometric model of the Austrian economy, WIFO-working papers 160/2001, Vienna. Internet: http://publikationen.wifo.ac.at/pls/wifosite/wifosite.wifo_search.frameset?p_filename=WIFOWORKINGPAPERS/PRIVATE5409/WP160.PDF (19.1.2006).

51 The projections of the elements of the occupational distribution matrix are obtained using a weighted GLS-procedure (residuals of the first estimate are used as GLS-weights). In addition, some restrictions are imposed on the occupational projections (e.g. fixed relations to the overall Austrian occupational forecast, restrictions on teacher demand based on projections of pupils and classes). In sum, this leads to inconsistent estimates. Consequently adjustment procedures are necessary.

forecasts of the demand and supply side are independent and are only used for a rough comparison of supply and demand. Regional forecasting is expected to be conducted on a regular basis for Upper Austria within 4 years intervals.

Qualification as a cornerstone in the regional innovation strategy of Upper Austria

Figure 9 Basic structure of "Innovative Upper Austria 2010"

Source: http://www.ooe2010.at/images/download_folder_inno2010_e.pdf, 1

In Upper Austria, a unique approach to formulating regional innovation policy was introduced in the second half of the 1990s, following the method of mixed top-down and bottom-up programme planning. An initial programme was developed in 1998, which included education and training as one of its three cornerstones and 13 guidelines.[52] The programme was implemented by the regional government and the regional parliament, proposed a number of actions, and had a clear implementation structure and budget. It was formulated in a broad and inclusive consultation process involving local players, and took into account experience and comments from both foreign experts and EU institutions. In regards to education and training, the main guidelines were formulated as the continuous renewal of processes, the development of a positive sense of lifelong learning, and an increased orientation of educational supply towards economic demand. The focus was on continuous VET, in order to to achieve three main goals: permeable pathways, a demand orientation, and effective learning processes. Based on these goals, a set of concrete strategies and measures were formulated that are intended for implementation by different actors (see table 3).

[52] See a basic description of the programme: http://www.cordis.lu/oberoesterreich/general_overview.htm, http://www.cordis.lu/oberoesterreich/technology_policy.htm; and more material in German: http://www.tmg.at/index.php?main=/1396_DEU_HTML.php; the short version: http://www.tmg.at/strategische-sprogramm_kurz.pdf; the long version: http://www.tmg.at/strategischesprogram_lang.pdf

Table 3 Strategies and measures for education and training in the Upper Austrian regional innovation programmes

Strategy 2000+

Strategy 1: Creating awareness for education and training
- Promotion campaign among population and enterprises
- Extension of individual support of CVT with focus on advanced computer technology (CAD, CAM, CNC, CAQ, etc.)

Strategy 2: Growth of the Upper Austrian Polytechnic network
- Doubling of study places in current programmes from 1.000 to 2.000 until year 2005
- building a new site in Linz
- increasing applied R&D activities of Polytechnics' staff

Strategy 3: Strengthening continuing professional and vocational education and training in specific fields due to demand
- Management and entrepreneurship
- Foreign languages
- Support agency of international education and mobility
- Postgraduate programme and continuing training in the field of "Design.Communication.Engineering"

Strategy 2010

Strategy 1: The early and competent furtherance of interest in technology
- Setting a basis to activate the largely unexploited potential of women in technical professions: Power Girls
- Experience of technology at elementary school age, e.g. design of experiments in the elementary school classroom in co-operation with scientists, engineers and teachers

Strategy 2: Development, furtherance and retention of top talent in Upper Austria
- Development of a talent advancement system for identification and furtherance of top talent
- Learning from the best: targeted support of mobile Upper Austrians and recruiting of foreign experts for Upper Austria's research institutions and companies
- h.ASSET – House of Advanced Studies in Science, Engineering and Technology
- Upper Austrian Creative Centres: form a creative schooling system throughout Upper Austria, which will allow technical and natural sciences experiments, creative writing, theatre, photography, film, media work, graphics/painting and the cultivation of foreign language skills outside a marking system

Strategy 3: The closer alignment of professional training with demand
- Expansion of mechanical engineering studies in Upper Austria: mechatronics expansion in the direction of modern mechanical engineering and lightweight construction (new materials, modern production techniques), creation of an inter-faculty course "Economics and Mechanical Engineering"
- Wood construction focus at an existing secondary civil engineering technical college in Upper Austria
- Social competence: extensive educational offensive aimed at initiating a change of consciousness and capabilities fort he Improvement of social skills at all levels of training and further training from pre-school age to employment
- Creation and operation of an interactive information platform of companies and educational bodies in Upper Austria via a central Internet marketplace for the presentation of all the professional and further training measures on offer

Source: 2000+ http://www.tmg.at/strategischesprogramm_kurz.pdf, 20-24 (selected and translated by author); 2010: http://www.ooe2010.at/images/download_kurzfassung_inno2010_e.pdf, 25-27 (selected by author)

An outstanding feature of the Upper Austrian strategy is that, in the process of developing a follow-up programme, a detailed external evaluation that included extensive self-assessment was commissioned (Ohler et al. 2004)[53]. This included assessment of the new "Innovative Upper Austria 2010" programme. The evaluation pointed to the need for mechanisms which would fully integrate qualification measures into the strategy.

"Professional qualifications" are a cornerstone of this follow-up programme. The new programme involves an even broader and more inclusive procedure, involving 250 experts from industry, local government and institutions, research, and social partners in working groups on the five topics. In comparison to the 2000+ programme, the new measures and strategies are both more extensive and more specialised. Proposals related to initial and secondary education (such as "power girls", science experimentation in elementary school, and the development of "creative centres") as well basic topics such as the social skills offensive have been included in the programme. Proposals for very specific programmes, e.g., in mechatronics or wood processing, have also been included.

To some extent, the process of formulating the strategy has followed an anticipatory approach. First, the Upper Austrian Council of Research and Technology[54] formulated basic strategic guidelines. Second, the leaders of the five thematic areas structured the process by allocating experts to working groups and organising the results of the work by formulating strategic lines and applying priorities to the proposals based on the overall strategic goals of the 2010 strategy. Third, members of four operative working groups analysed the needs and formulated proposals for action in education and training. In total, 52 experts from mixed areas, about two fifths from industry, two fifths from research and education institutions, and one fifth from interest organisations, contributed to this process during a three month period in spring 2004. The leaders of two working groups came from industry and the leaders of the remaining two from research and educational institutions. Their work has been extensively documented and can be found on the internet.[55] The analysis and anticipation of needs was structured by a set of questions (see table 4). Core questions for anticipation were formulated regarding the demand for qualifications of export enterprises, the development of an information system for the monitoring of supply and demand on the education and training market, and the competence of SMEs in formulating their demands for qualifications.

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53 Ohler F / Schellmann G / Jörg L / Essl J / Arnold E (2004) Evaluierung der Oberösterreichischen Technologie- und Marketinggesellschaft (TMG) mit besonderer Berücksichtigung des 'Strategischen Programms OÖ 2000+'. Report commissioned by Land Oberösterreich, Amt der Oberösterreichischen Landesregierung. May. Vienna-Linz-Brighton: Technopolis and KPMG. Internet: http://www.tmg.at/Ergebnis_der_Evaluierung.pdf

54 See: http://www.rftooe.at/

55 Documentation of working group sessions and members: http://www.ooe2010.at/198_DEU_HTML.php#Berufliche%20Qualifikation

Table 4 Questions analysed by the working groups

„Um ein Gesamtbild über Bildungsbedarfe und -angebote aus der Interessenlage der Unternehmen zu erhalten, wurden bei der Erstellung des vorliegenden Strategischen Programms gezielte Analysen vorgenommen, wie z.B.:

- Wie können wir das Technikinteresse der Menschen, insbesondere von Jugendlichen, wecken und fördern?
- Wie befähigen wir die Arbeitskräfte dazu, bis 65 produktiv zu sein?
- Wie können die Bildungsbedarfe exportorientierter Unternehmen besser ermittelt und abgedeckt werden?
- Wie kann Oberösterreich ein interaktives Informationssystem für Angebot und Nachfrage am Bildungsmarkt einrichten und betreiben?
- Wie befähigen wir KMU, ihre Bildungsbedarfe zu erkennen und zu formulieren?
- Wie können wir den betrieblichen Erfolg von Bildungsmaßnahmen evaluieren und sicherstellen?

Und Bezug nehmend auf das Zusammenwirken von Forschung und Bildung:

- Welche Anforderungen sind an das Bildungssystem zu stellen, um zu gewährleisten, dass Spitzenleistungen in Forschung und Technologie erzielt werden?
- Wie können solche Spitzenleistungen effizient in die Wirtschaft transferiert werden?"

Source: http://www.ooe2010.at/files/download_langfassung_inno2010.pdf, 68

The method used in the working groups was predominantly the compilation of informal expert knowledge drawn from the members in attendance. To some extent, formalised knowledge (e.g., the compilation of information from surveys) was also used. Formalised techniques were not utilised andgoalswere mainly oriented towards the short-term. Needs analysis was also a concern. The need to improve information regarding the current situation was frequently cited as a top priority.

3.3.3.2 Anticipation of skill demand in Lower Austria: a learning region approach

Regional innovation policy

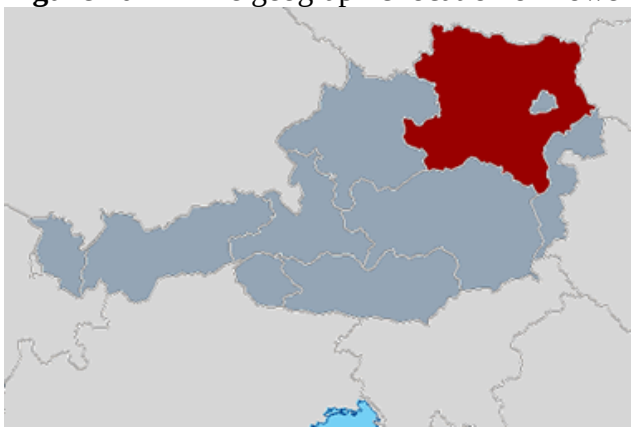
Lower Austria has been very active in the development of regional innovation policy, and has also participated in European activities for the development of regional foresight strategies.[56] Since 1995, the region has participated in the RIS (Regional Innovation Strategies) and RITTS (Regional Innovation and Technology Transfer Strategies und Infrastructures)[57] programmes and follow-ups, and has also taken active roles in several European regional policy projects and initiatives.[58]

[56] See: Gavigan J P / Scapolo F / Keenan M / Miles I / Farhi F / Lecoq D / Capriati M / Di Bartolomeo T, eds. (2001) A practical guide to regional foresight. FOREN Network Report EUR 20128 EN, European Communities. Internet: http://www.mbs.ac.uk/research/centres/engineering-policy/research-projects/documents/FOREN_guide.pdf; Austrian version: EK-DG Forschung (2002) Praktischer Leitfaden für die regionale Vorausschau in Österreich. Luxemburg: Amt für amtliche Veröffentlichungen der Europäischen Gemeinschaften. Internet: http://www.efmn.info/guides/CGRF-Austria.pdf

[57] See: http://euris.noe.gv.at/risengl/default.htm

[58] See the profile in the IRE (Innovating Regions in Europe) Network: http://www.innovating-regions.org/network/whoswho/regions_search.cfm

Figure 10 The geographic location of Lower Austria



Source: http://www.innovating-regions.org/network/whoswho/regions_search.cfm

The Lower Austrian regional innovation policy is part of a much broader policy for regional development. Regional government has initiated and coordinated a broad, inclusive approach towards generating a Development Concept for Lower Austria and its sub-regions between 2003 and 2005.[59] An open process including a survey of residents (with more than 50.000 collected questionnaires), and a series of workshops in more than 70 local communities, which were supported by about 30 coaches from regional management.

Figure 11 shows the basic structure of the regional development strategy which formulated an extensive mission, taking into account broad challenges linked to the economy, society, and the environment. Regional development follows a diversified structure, with many actors and institutions being co-ordinated by the responsible department of the regional government. These actors have to be co-ordinated so that that they can strive towards common goals.

The regional innovation system (RIS) in Lower Austria is emphasised as part of the overall development concept of the region. It is also co-ordinated by the regional government. The focus is on responding to the needs of enterprises and business development (Figure 12). "The regional innovation system consists of several modules aiming to foster the economic success of the regional firms and thus to increase the quantity and quality of work." (Priedl 2004, 5).[60] The main actors in the RIS[61] are regional innovation centres, the economic development agency, development agencies, institutions that support co-operation, research institutions, etc.

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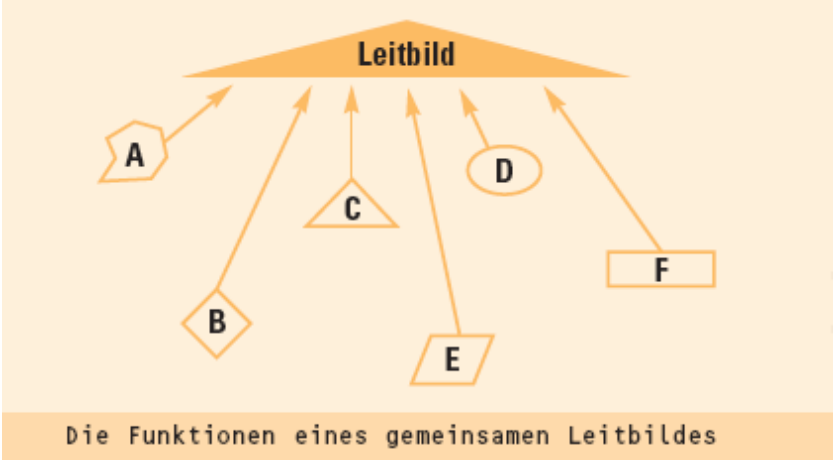
59 The process and its results are documented in the internet: http://www.strategie-noe.at/. See also the Development Concept Lower Austria: http://www.noel.gv.at/service/ru/ru/landesentwicklungskonzept/dokumente/-Landesentwicklungskonzept.pdf and the Development Concept for the sub regions: http://www.strategie-noe.at/uploads/dokumente/perspektiven_fuer_die_hauptregionen.pdf

60 Priedl I (2004) RIS as a basis for Lower Austria's Structural Funds Operational Programme. Presentation at the IRE Workshop Implementation and monitoring of Regional Innovation Strategies. 13-14.5.2004. Cape Greco (Cyprus). Internet: http://www.innovating-regions.org/download/Irma-_Priedl_1_Cyprus.ppt#

61 See: http://www.riz.at/; http://www.ecoplus.at/magazin/00/artikel/24640/doc/d/Firmengeschichte_2005d.pdf

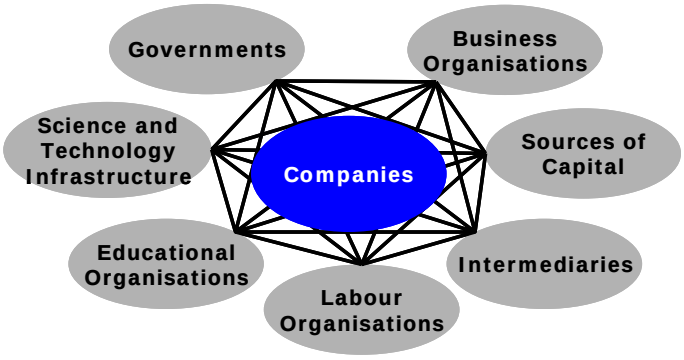
Figure 11 Basic structure of the Lower Austrian Development concept



Source: http://www.noel.gv.at/service/ru/ru/landesentwicklungskonzept/dokumente/Landesentwicklungskonzept.pdf, 10

Source: http://www.noel.gv.at/service/ru/ru/landesentwicklungskonzept/dokumente/Landesentwicklungskonzept.pdf, 24

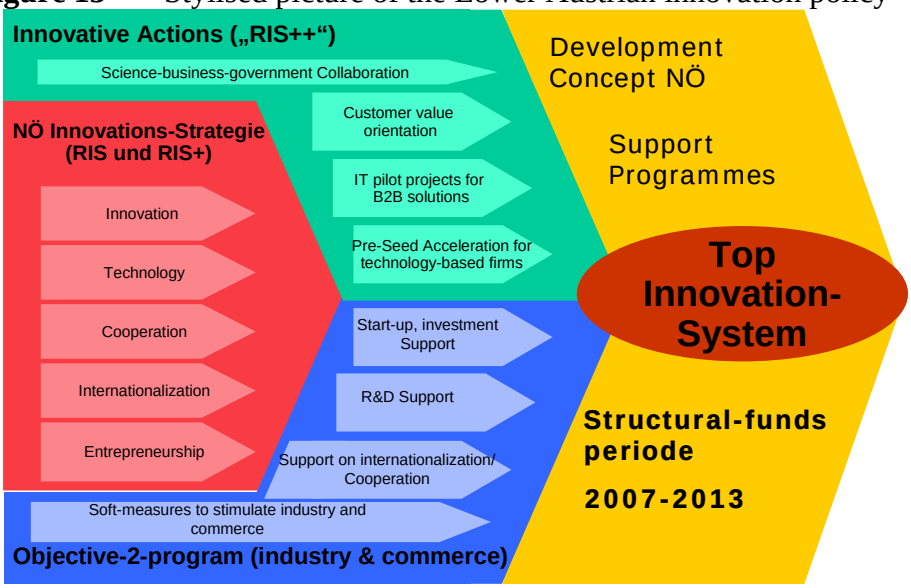
Figure 12 The regional innovation system in Lower Austria



Source: http://www.innovating-regions.org/download/Irma_Priedl_1_Cyprus.ppt#, 5

Educational organisations are considered to be part of the innovation system, however, qualifications are not emphasised among the core activities of the Lower Austrian regional innovation policy (Figure 13).

Figure 13 Stylised picture of the Lower Austrian innovation policy



Source: http://www.innovating-regions.org/download/Irma_Priedl_1_Cyprus.ppt#, 16

In order to develop regional strategies for the development of the education sector, a regional agency was founded in 2000: The "NÖ Bildungsgesellschaft".[62] Among its objectives are:

- the coordination and steering of the regional higher education sector (3 polytechnics and a university of continuing education),
- the development of a comprehensive concept of higher education that takes into account regional policy goals and economic demand,
- the coordination of programmes and fields of work in the polytechnic sector,
- the coordination and assessment of financing education and training policy,
- support of cooperation and networking in higher education, etc.

As part of the development of a concept for the regional higher education sector, this agency has set up a regional framework of anticipation in education and training which is described in detail in the following section.

An anticipation system oriented towards the development of a learning region

A specific approach to anticipation has been developed in the region of Lower Austria, called "Netzwerkstatt". The approach stems from the task of the Lower Austrian

62 See: http://www.noe-bildung.at/

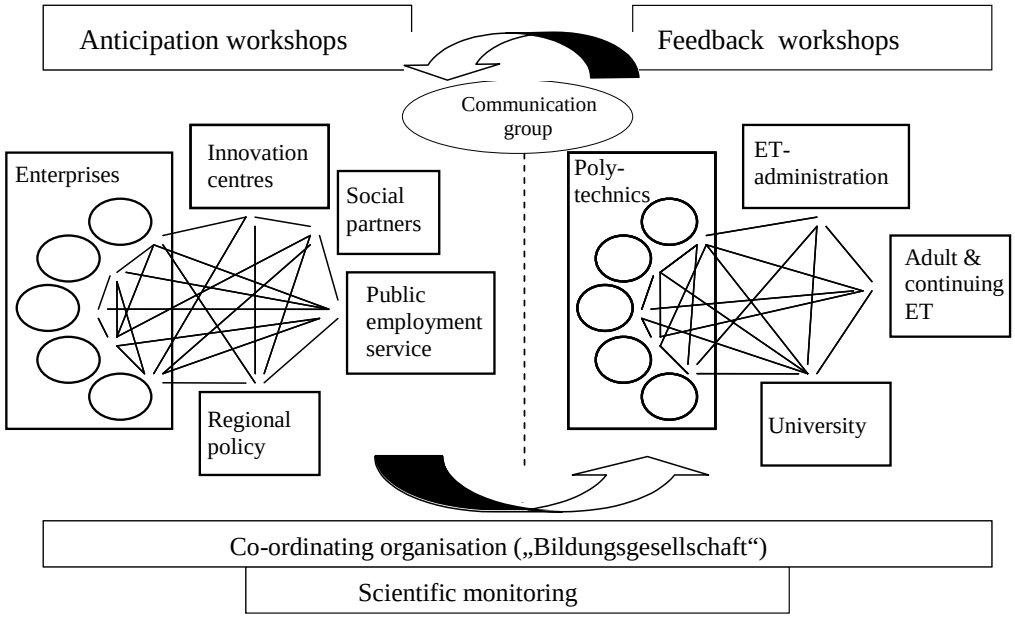
"Bildungsgesellschaft" i.e. to co-ordinate the polytechnic sector and develop a concept for higher education policy at the regional level.

The project was initiated in 2000 based on regional projections of supply and demand and a scenario project designed to identify the main factors impacting on educational development as perceived by the main regional actors. After testing the acceptance and interest of the regional actors, the project was set up, with the following objectives:

- to develop a qualitative mechanism of anticipation of skill needs in addition to projections.
- to create a regional "Think Tank" of actors from employment and innovation systems.
- to analyse the relevant issues in a framework combining research and practice
- to provide feedback to the polytechnics and the regional ET system.

To achieve those objectives, an organisational framework was established which is summarised in figure 14. As a first step, key enterprises and institutions in the region were selected, and in an initial workshop the model for anticipation was discussed with the participants in order to get comments and feedback.

Figure 14 Structure of Lower Austria anticipation project



As a core activity of the model, "anticipation workshops" on selected topics are held with employment/innovation actors twice a year, followed by "feedback workshops" with the ET actors. The preparation and monitoring of the process is done by the co-ordinating organisation and scientific advisers. The members of the procedure are also

connected by an internet platform which gives access to the results, and provides room for additional discussion and exchange of information and comments.

About 60 persons from the indicated sectors were selected to participate in the anticipation workshops, two thirds of them representing strategic enterprises in the region. Enterprises from different economic sectors are mixed in size and employ about 5% of employees in the region. The first six anticipation workshops focused on the following topics:

- ICT- skill demands;
- co-operation between enterprises and ET institutions;
- key qualifications; life long learning;
- R&D and innovation;
- specialised professional competence.

Identification of problems and potential solutions, from the point of view of the different actors, are developed in "anticipation workshops". Two lines of action are developed in order to find solutions: first, determining what the actors involved, particularly enterprises, can do themselves and, second, discerning what policy makers should be asked to do. The participants appreciate the results, as well as the exchange of experience. As such, a process of community building is under way.

"Feedback-workshops" with the ET providers are set up after the anticipation workshops have undergone a consolidation period. Related to the tasks of the co-ordinating institution, the main group of participants represent the polytechnic sector. In the region, three polytechnics are situated which are interested in developing a high profile for the sector while at the same time competing for resources. A basic division of labour has been established based on the specialisations of the three institutions, and a decision by the regional government not to support additional competitors in the region. The building of trust is a main issue, as the providers fear that anticipation activities will reduce their autonomy.

One of the main concerns of the education providers was to develop quantitative forecasting of the demand for skills and competences. In the workshop on R&D and innovation, basic information problems among the different actors were uncovered, and many proposals for improvement were brought forward (e.g., to set up an information base on research topics being covered institutions in the region).

The project can be seen as an activity which might lead to the building of a learning region, by first determining the economy's more aggregate needs in terms education and training, considering what the different actors can do by themselves, as well as what they expect from education and training institutions and policy-makers. A basic asset of the project is community building. Both groups of regional actors do not normally have much opportunity to exchange their views and experiences on the topics in question. Therefore, they appreciate the opportunity to discuss the problems within their own communities. This is particularly true for the participants from the economy

in the anticipation workshops. The participants from the education and training system in the feedback workshops would prefer more direct communication with their counterparts of the economy and society.

Efforts have been made to reduce the duality of these types of workshops in order to move towards more common activities. Working on the improvement of the R&D and innovation structures in the region is envisaged as a first step in that direction, which should bring the actors together in a joint activity. (Thus, the project moves towards the development of *a local network for action learning* among diverse actors, the most demanding type of learning region approached by the CEDRA project (Nyhan 2005).[63]

Apart from the building of linkages among participants, the results of anticipation activities also involve summarising documents provided by scientific advisers which include analyses of the topic in question based on previous scientific research, and documentation of the findings and conclusions developed in earlier workshops. The participants are asked to take action as suggested in their portfolios, and the Bildungsgesellschaft is asked to take action in the broader regional context.

So far, activity has mainly focused on knowledge production. Linkages to action are provided so far as it concerns the participants themselves, however, the links to political decision-making are not as clear. As we have seen in the section above, rather complex policy structures are present in Lower Austria, and the education system does not seem to be deeply integrated into regional policy. The envisaged concept for higher education policy might be an element in that direction.

More deliberate steps towards the building of a learning region might also be a fruitful perspective for future development. The inclusion of more actors from education and training would be necessary for that purpose, along with the establishment of concrete collaboration projects .

3.3.3.3 Comparison of regional cases

Quite different structures and practices can be found in the two regions neighbouring Austria. Interestingly, the two regions are not directly connected by co-operative activities but both are linked to other Austrian regions by co-operation or common participation in European projects. To some extent this might result from the different allocations made to NUTS 1 regions.

Upper Austria has co-operated in European projects with actors from Salzburg and Styria. Personal linkages seem to exist between Upper Austria and Styria, as a central figure in the Upper Austrian development agency previously worked in one of the core

[63] Nyhan B (2005) *Learning together for local cooperation in the learning region.* Paper presented at ECER, Dublin 07-10.Sept.2005; see also http://www.trainingvillage.gr/etv/Projects_Networks/Cedra/strand2/Learning_region.asp; http://www.theknownet.com/renderXML.opendoc.fcgi?id=learningRegion

organisations in the Styrian innovation system. Innovation policy is also clearly focused on the development of clusters in those two regions. Consequently, cooperation has been set up with European regions characterised by strong cluster policies, e.g., Northern Italy. "In particular, many industries of Northern Italy are mentioned as role models for clusters. (...) As second cluster stronghold is Austria. In the regions of Styria and Upper Austria regional economic development is entirely cluster-based. A particularly strong cluster in both regions is the automobile sector." (IRE subgroup, 6).[64]

Lower Austria has been increasingly integrated into the wider Vienna Region, and has strengthened its linkages to new neighbouring countries. This region has followed the approach of regional innovation systems (RIS) from the beginning, and also widely participated in European regional policy projects.[65] The building of clusters is also a line of action in Lower Austria; however, the approach to regional policy is much broader.

We can also find some other stylised differences in policy structures and in the relation of education and training to other policy fields between the two regions. Four basic traits can be highlighted:

(1) Differences in the overall orientation of policy.

(2) Differences in the organisation of policy making.

(3) Differences in the kind of embeddedness of education and training in innovation policy.

(4) Differences concerning anticipation practices.

As summarised in Table 5, practices differ greatly between the two regions and in some ways their strengths and weaknesses might be conceived as inverted. The practice in Upper Austria for identifying pragmatic gaps and solutions is very straightforward, however, it is less oriented towards finding unexpected opportunities and threats which may arise in the future. The practice in Lower Austria is very open to new future developments, although it is less oriented towards more comprehensive policy implementation.

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64 IRE subgroup. Regional clustering and networking as innovation drivers'. Design of cluster initiatives - An overview of policies and praxis in Europe. Learning module 1. Internet: http://www.innovating-regions.org/download/Design_of_cluster_initiatives.pdf; see also: http://europa.eu.int-/comm/enterprise/entrepreneurship/action_plan/ap_06b.htm. Another expression: "Regions around the world have used clusters to promote themselves as a desirable place to visit and do business. Few have taken it so far the Austrian region of Upper Austria, which proudly calls itself .Clusterland." (Rosenfeld 2002, 29).
Rosenfeld S A (2002) Creating Smart Systems. A guide to cluster strategies in less favoured regions. European Union-Regional Innovation Strategies. April 2002. Carrboro, North Carolina: Regional Technology Strategies (www.rtsinc.org). Internet: http://www.innovating-regions.org/download/-GuideRosenfeldfinal.pdf

65 A search on the IRE website obtains by and large more hits for Lower Austria than for all other Austrian regions.

Table 5 Differences between regions

Upper Austria	Lower Austria
Orientation	
The Upper Austrian strategy is very much pragmatic, centralised, action oriented.It focuses on economic activity and the functioning of education and labour markets, based on the concrete analysis of current strengths and gaps, and is oriented towards finding solutions in the short term.	The Lower Austrian strategy is decentralised and focused on comprehensive regional development and cooperation with new member states. It is open to the detection and identification of new inputs and initiatives, as well as attempts to develop a common mission for the various policy fields involved.
Organisation	
Organisation in Upper Austria is based on an integrative intermediary agency which is owned by the regional government, and responsible for effective programme implementation. Social partnership plays a key role for integrating the various actors, particularly regional enterprises. The organisation follows w the management by objectives and programme budgeting approach, including comprehensive internal assessments and external evaluation at certain stages. The regional government is directly involved in the financing of its activities.	Organisation in Lower Austria is based on a combination of strong administrative responsibilities by three regional government departments. On the one hand, the departments are part of a complex system involving several independent agencies in the form of business organisations and, on the other, they are responsible for different aspects of policy making. The development work is very much concentrated in the government departments. Regional innovation policy is organised as an own policy field with separate responsibilities, focused on the support of enterprises and using international and European experience via advice and learning through participation.
Embeddedness of education and training	
Qualification and education-training is a clearly integrated pillar of the strategy with a pragmatic set of measures to be implemented. The objective is clearly oriented towards economic demands. The measures are based on expert assessment of current gaps and needs; some are broad and some more specific.	Education and training is conceived as an asset in regional infrastructure development which has to be organised to achieve broad societal goals. Due to their organisational structure, innovation policy agencies are separate from education and training policy. An organisation has been created top help facilitate integrationwhich focuses on higher education.
Anticipation	
A set of activities for the anticipation of skill demand has been identified, some of which are explicitly oriented towards anticipation, and some of whiche have followed this function more implicitly: a quantitative forecast has been established by a single actor; a forum for active labour market policy based on social partnership is conducting qualitative anticipation work geared towards locating pragmatic means providing the needed skills and reducing unemployment; expert working groups in the process of the setting up of the regional innovation strategy have analysed the regional education and training needs due to the demand from the economy, taking into account the future development. However, he activities are only related to each other partly and indirectly.	A formal anticipation system has been set up for the purpose of coordinating the systematic development of regional higher education. Education and training is also considered to some extent in the regional development concept, and in regional innovation policy. Innovation policy is also related to European activities connected to regional foresight. Steps towards the building of regional networks, and towards the systematic management of anticipation knowledge have been taken which can be seen as prerequisites for the development of a learning region. Broadening the approach to other parts of the education and training system, and a more implementation-oriented approach to policy integration might be further steps in these activities.

4 Conclusions: National trends and regional approaches

The Austrian example is a specific case in the mapping of anticipation methods. It must be clearly situated as an informal system which emphasises a professional-political approach. The anticipation system also reflects the segmented structure of the Austrian education and training system.

At the national level, some strategies for quantitative projection and forecasting are in place, however, they do not provide a comprehensive information base. Some of the procedures only concern overall employment and labour market development, without referring to qualifications or occupations. Other procedures only reflect the supply of

education and training. As far as quantitative forecasting of qualifications and occupations is available, it has not been provided on a regular basis (but rather as isolated projects at certain points in time), and the classifications used have not been related sufficiently to the supply side of education and training.

Professional-political approaches at the national level are very much related to specific sectors of the education training system, and the leading actors as well as the communication channels among them are very different in the various subsystems. The most established procedure for professional-political anticipation is situated in the Fachhochschule sector of higher education. There is a national requirement that formal anticipation be in place as a sine qua non for the accreditation and re-accreditation of study programmes, however, as the sector is very much regionalised and the institutions are autonomous in providing their studies, anticipation procedures are frequently aimed at single programmes of study in a certain regional context. Thus, current anticipation procedures lack a broader overview of the demand for qualifications.

New developments for anticipation of the demand for skills and competences were initiated at the regional level roughly a decade ago, and to some extent are related to the establishment of the Fachhochschule sector. The Länder as the regional administrative unit (which are much smaller and also have less political responsibilities than the German Länder) have taken on new responsibilities in higher education by supporting the Fachhochschule providers. New and more decentralised activities of planning and steering education and training have begun, however, anticipation procedures have developed very slowly.

Another strand of development has been regional innovation policy. Centres for innovation have been set up in many locations; some also host the new Fachhochschule establishments. However, linkages between the support of innovative enterprises and education and training services remain minimal.

A more elaborate system of anticipation has been set up in Lower Austria, the region surrounding the capital of Vienna. The system is set up as a cooperative social system of knowledge production and includes numerous regional actors in a moderated process: enterprises, innovation centres, policy makers, social partners, the employment service and the actors from the education and training system. That system acts as the nucleus of a learning region, and tries to integrate available information from the research system with informal knowledge drawn from the action plans of various regional actors. Experience thus far shows a high level of interest for cooperation among the actors, and points to several gaps in information and understanding among them. So far, the anticipation system has focused on the Fachhochschule studies; however, some steps have been taken to give the regional university for further education and the upper level VET colleges a more central position in the system.

The region of Upper Austria has set up a different kind of system, which combines administrative and policy actors on the one hand, and more elaborate procedures of quantitative projection and forecasting on the other.

In sum, the regional level serves as a catalyst in setting up more elaborate systems for anticipating skill needs. This allows the systems to follow a professional-political approach. So far, the quantitative-technocratic approach is rather weak in those activities. However, it might get some momentum from the regional level in the future.

In terms of methods, the Austrian system for the anticipation of skill demand on the education and training side relies mainly on "*practitioner task forces*" which work at an informal level. Such task forces are mainly related to specific qualification fields and levels, or to regional areas, not so much to the national level. They are oriented towards the creation and updating of VET programmes from a short to mid-term perspective. In some sectors, e.g., fulltime VET schools, the perspective is up to ten years. Informal, consistent communication channels at the grass roots level are an important lever for flexible adaptation of teaching and learning in the VET system. On the labour market side, the public employment service uses formal methods based on econometric models combined with surveys, projections, and systematic analyses of advertisements for short-term information. Longer-term forecasting projects are commissioned selectively. The main focus of those procedures is the improvement of the current labour exchange, and to some extent the generation of information for labour market training. Educational choices are also considered, however, the procedures involved are only weakly related to formal education and training. Programme development in initial and formal VET is clearly separated from those activities. An overview of the informal knowledge available and a comprehensive picture of medium and long term development of the demand for skills and qualifications is lacking in the system – it is not easy to say whether this is good or bad, because a clear view of the quality of the matching of supply and demand for qualifications is not available.

In terms of the foresight approach, it must be noted that it s not currently utilised in a serious sense. Of the criteria cited above (section 2.2.) only those which emphasise networking and interactive debate are in place. A rather strong practice of informal knowledge production and plenty of "local" specialised and regionalised networks do exist, however, the core criteria of employing formal methods, considering a wide range of factors, and a long-term orientation are not fulfilled by even the most developed of the practices currently being used.

Similarly, the criteria highlighted above (section 2.1.2.) for anticipation in a TLM perspective are not fulfilled in the Austrian anticipation system. At the most abstract level, there is clearly institutional diversity in the system, however, the principles of complementarity and congruency are not fulfilled. Educational and labour market actors basically follow separate lines of action. A significant exception is the case of regional practice in Upper Austria, where different models of integration are present. At the level of welfare and labour market policy, the principle of individual autonomy is fulfilled. The VET system is very much driven by individual choice. Plenty of descriptive information is available, however, little is known about its overall efficacy and efficiency. Furthermore, compensation for unequal access is low in this system. In terms of the basic principles of TLM policy, there are some transitional measures currently in place. A guarantee for getting an education or training opportunity has been established for young people who are not enrolled in education or are employed, and labour market

policy measures are provided systematically for unemployed people, particularly those at risk of long-term unemployment. However, anticipatory risk assessment is not included in those measures.

In sum, the foresight and transitional labour market approaches could provide several pathways for improvement.

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APPENDIX 1

Figure A1 Reasons for market failure and targeted policy measures

Market failure	Policy measures
Low -skill/bad job trap; risk management; external production economies, low -skill/low -tech trap	Training vouchers
Information	Accreditation programmes
High-wage/low -skill trap	Apprenticeship contracts
High-wage/low -skill trap	Wage differentials
External production economy, complementarities labour – capital	Investment tax credits, depreciation allowances
Innovation – skills interaction, low -skill/low -tech trap	Property rights on innovation
Education – vocational training	Public support for education
Imperfect competition, a) tax , b) regulatory distortions	Reducing entry barriers for new firms
Credit constraints training risk	Government provision of loans
Credit constraints	Conditional loan guarantees
Poaching, low -skill/bad job trap	Levy system
Internalisation of uncompensated costs/benefits: a) wage, b) risk	Social partnership
Imperfect competition	Centralized collective bargaining over education
Unemployment benefits, welfare payments; credit constraints, low -skill/bad job trap, poaching	Linking training subsidies to ue-benefits and welfare payments (esp. for the long-term, unskilled unemployed)

Source: Booth/Snower 1996 (Compilation by author.)

Structure of the Austrian system of education and training (ET)[66]

Figure A2 shows some basic assets of the Austrian VET system:

- *Compulsory education is tracked* at the lower secondary level, with a selective academic track (Academic secondary school) and a general track which includes achievement levels in main subjects (General secondary school). The majority of

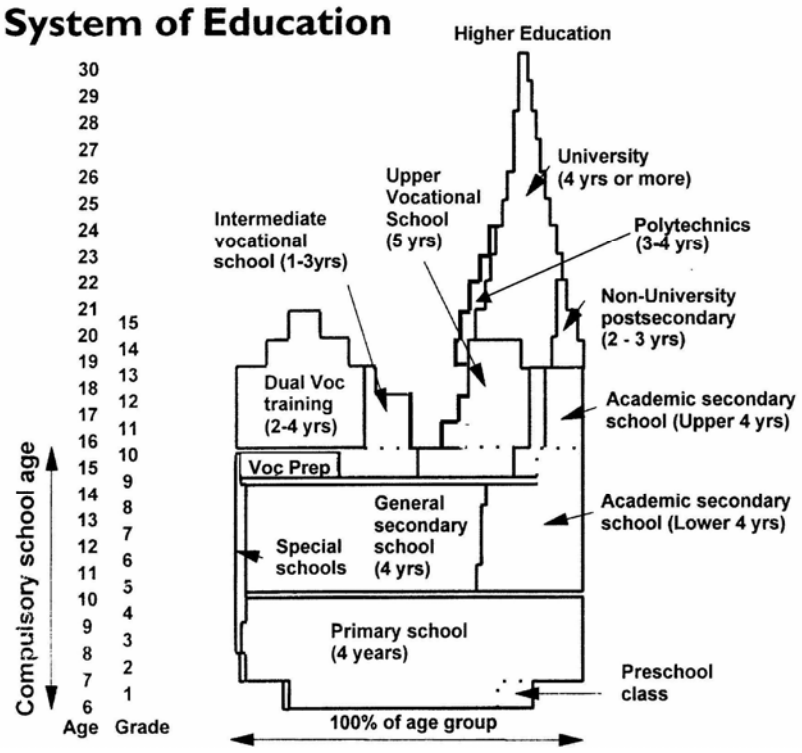
66 Source: Lassnigg L (2005) Short Statement Paper for the International Conference on Vocational Education and Training Reform – University of Oxford, September 27th – 28th 2005.

pupils from the academic track follow up at upper secondary level or change to upper level VET-colleges, a smaller proportion of pupils from the general track follow up to academic qualifications, mainly via upper level VET-colleges.

- The VET system includes botha strong "dual" *apprenticeship system* and *fulltime VET* schools and colleges with many specialised programmes, particularly in industry and crafts related areas.
- The system consists of *three tracks*, with the selective VET-colleges (Upper vocational school) providing credentials equivalent to the academic upper level school (university access), apprenticeship and intermediate level VET schools compete to some extent for pupils – VET-colleges are growing, the other tracks rather lose pupils. On top of apprenticeship, there is another step of qualification of master craftspeople which is required to run an enterprise in several trades (Meisterausbildung).
- VET schools start at grade 9 (age 15) within compulsory education, and apprenticeship starts at grade 10 (age 16) after the end of compulsory education – thus there are *two steps* where main transitions appear, a first at grade 9 (where pupils choose between VET colleges, VET schools, and a one year vocational preparatory school that is not very popular), and a second at grade 10 where many transitions from fulltime school to apprenticeship take place (often when achievement was not successful).
- Some part of an age cohort is lost after grade 9 (*early school leavers*), about half of those young people do not acquire a full certificate of compulsory education, and pupils from special schools do not receive any credentials. Access to apprenticeship does not require any formal credential, one has to find an accredited firm willing to conclude an apprenticeship contract, in which case access to part-time school is compulsory. Firms, selection strategies, however, differ according to many characteristics.
- *Higher education* is rather small, with universities as the dominating sector, and two tracks of non-university institutions included: traditional post-secondary institutions (predominantly teacher education for non-academic schools), and a new selective polytechnic sector (Fachhochschule) which is frequently chosen by graduates from VET colleges, often from a similar specialisation.
- *Transition to higher education* requires qualificatiosn from the academic track or from upper level VET colleges (Matura examination). Polytechnics choose their students, and universities have recently started to develop selection procedures on top of the Matura. Additional procedures to get access to higher education without a Matura from initial education have also been developed (polytechnics can choose mature students without Matura, however, they seldom do; a separate examination (Berufsreifeprüfung) was been established at the end of the 1990s which has high acceptance from students.
- The VET system provides *formal qualifications* at the different levels which are related to employment requirements. Since running an enterprise in many trades requires a formal VET qualification, the structure of programmes in apprenticeship is

regulated not only by education law but also by an employment regulation (Gewerbeordnung), and there are also formal links to the VET schools and colleges in that respect. The VET colleges in technology also provide access to a formal qualification after some years of practice (non academic engineer, those qualifications are recognised as higher education in EU regulations).

Figure A2 The Austrian system of education (proportions show approximately the participation by age)



- The VET system and higher education are *strongly segmented by gender*; traditional access patterns (males into technology, females into social, personal, and administrative services) are undergoing change very slowly.
- The increasing number of *young people with a migration background* often lacks the requirements to participate on equal terms with native young people in VET. Good programmes for their support have been developed in compulsory education, however, there is a lack of resources for their full implementation (thus they are strongly represented in special schools, which do not provide the credentials to follow up in fulltime VET schools).
- The *governance structure* of the VET system is complex and scattered: VET schools are under the responsibility of the federal ministry of education, firm level apprenticeship training is governed by the social partners and the federal ministry of economic affairs, the polytechnics are governed by an accreditation body, the federal ministry of education, and the regional governments. The enterprise sector is strongly involved via apprenticeship, and also via several bodies in VET schools and colleges.

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