Innovation for Sustainability in a Changing World
2nd South African-German Dialogue on Science for Sustainability
Pretoria, South Africa, 26-27 October, 2009

An Innovation Systems Approach to Sustainable Development

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The orthodox theory of economics implicitly places the issue of sustainable development within the category of externalities which are due to "market failure". This is one of the few areas where neoclassical welfare theory allows for public sector intervention in the economy. The reasoning behind this is that the price mechanism, which is normally seen as the perfect allocation mechanism, fails to recognise the costs imposed by the production activities of one party on another party. Thus, in the case of negative externalities, e.g. in the case of pollution, market determined costs underestimate the total cost of a certain line of production to society as a whole. This is also seen as an estimation failure of private cost-benefit analysis. The chief reason which is usually quoted for the existence of such externalities is a deficiency in the allocation of property rights which prevent those parties on whom external costs have been imposed from exercising their rights in demanding compensation. The consequent underestimation of the total cost to society therefore leads to production levels, and associated levels of environmental degradation, which exceed those that would be "optimal" from a marginalist perspective. In such cases, state intervention in the form of the allocation of property rights, and of the imposition of taxes, quotas and even perhaps outright bans are deemed as justifiable interventions in an otherwise perfect resource allocation mechanism. However, what was originally seen as an exception to the orthodox welfare maximisation criteria has relatively recently come close to dominating the centre ground of economic discourse as a rapidly accelerating rate of global environmental degradation is now generally accepted as the main overall medium to long term binding constraint on global economic growth and development. The current deficiency in addressing these externalities is generally attributed to a deficit in political will and inadequate legal provisions at national and global levels.

The evolution of legal frameworks is closely tied to theory and in the case of economic laws we should perhaps re-examine their foundation in economic theory if we hope to understand the current failure to address the sustainability problem with the required speediness. Mainstream economics has largely detached itself from the social sciences in its quest to emulate the hard sciences through the adoption of mathematics as the sole language of the discipline. In the process, the engagement with other disciplines in the social sciences, with their tendency to introduce analyses which are often not quantifiable, has mostly been abandoned. This is best seen in the shift from political economy to (neoclassical) economics as the orthodoxy in economic theory. One of the consequences of this shift has been to introduce a sharp dichotomy between the two constructs of the "private" and the "public" which has come to be accepted as a non-questionable self-evident reality. This development and the strengthening of the truth effect of this posited dichotomy has been cumulative and path dependent, not only within the discipline itself but also because of the mutually reinforcing relationship with the evolution of legal frameworks.

A "systems of innovation" approach to economics may, through its firm grounding in political economic theory, provide a viable alternative theoretical basis for a novel approach to the problem of sustainability. This approach emerges from evolutionary economics and its origin may be traced back to Friedrich List's (2005) refutation of Adam Smith's advocacy of the welfare benefits of free trade. This approach views economic systems as webs of linked institutions within an inescapably dynamic context, where

innovation is the driving force of economic change. Innovation is nowadays defined to extend far beyond technology to encompass all alterations in economic organisation which are seen to be an improvement on a previous state. Institutions are defined to include formal institutions and informal ones in the form of established routines and practices. This approach in its popular articulation of "national systems of innovation" has until now been confined to the empirical and conceptual perimeters of the nation state. However, it also applies to more localised systems at the sub-national level and broad systems at the regional and even global levels.

The relevance of this approach to the sustainability debate lies in its conceptualisation of complex systems where the range of institutions and their various modes of interrelatedness blur the sharp distinction between the public and the private spheres. As a consequence, it erodes the theoretical foundation of the concept of externalities which is premised on the compartmentalisation of economic agents. From within this body of theory we can start thinking of cost from the basis of total economic cost which includes the valuation of those costs (and benefits) which neoclassical theory relegates to the category of externalities. In shifting the conceptual base of value away from that of exchange to a broad one within which exchange values determined by market transactions are a subset, we lay the foundation for an approach to economic cost-benefit analysis which from the start incorporates considerations of sustainability in its economic calculus. Thus we would have an analytical framework which would not longer have to "add-on" the analysis of environmental costs to its theoretical core. Instead such costs would already be incorporated in theory. The shift to this alternative economic paradigm would also carry implications for a reformulation of policy and of the associated legal structure. This, however, is where the power/knowledge complexities have to be considered. All three interlinked breaks in theory, policy and law are simultaneously subject to the interplay among diverse power bases, including the vested interests of the various fractions of capital in all of the variations of capitalism, to civil organisations and to governments. In terms of advocacy for a concerted effective approach to sustainability all three fronts have to be addressed simultaneously by combination of academics from the social and the hard sciences, civil organisations, international bodies and national governments. The implications of the sustainability debate thus provide what is possibly a historically unprecedented study in the link between theory and praxis at the global level.

References:

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