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Synopsis of Approaches to Welfare and of Green Growth Concepts Currently under Discussion

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Synopsis of Approaches to Welfare and of Green Growth Concepts Currently under Discussion

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1. INTRODUCTION

The destruction of the natural basis of life, caused by economic activity, especially by the process of economic globalisation and coupled with a noticeable depletion of essential resources, now threatens the economic capability of Germany and many other states. At the same time, the induced changes to ecosystems and their influence on the welfare of society are generally underestimated (e.g. TEEB-Report 2010). It is becoming more and more apparent that the prevailing model of the market economy with its specific logic of value added and growth is not capable of averting the destruction of natural resources which can already be seen in many forms. As a result the social foundations of communities will be further threatened: immediately physically, through differing degrees of impact, or through increasing financial measures of compensation.

These problems, however, are not as recent as they may appear at a first glance. In contrast, questions of welfare and wealth as well as of environmental destruction and resource exhaustion have been a major issue in economic theory and economic practice already since the 18th century. Therefore in the study, „welfare“ and „wealth“ are also discussed as central notions in the context of the history of economic thought. One focus is laid on the limits to economic growth discussed already by 18th century Physiocrats and in the 19th century especially by John Stuart Mill and W. Stanley Jevons; the other focus is on the evolution of neoclassical economics up to the 2nd half of the 20th century, with special emphasis on its various attempts to establish utilitarian foundations for these notions. In addition, interesting contributions to the topic from so-called “founding fathers” of the “social market economy” and from other liberal thinkers in the second third of last century, in a period where growth seemed to be both urgent and uncontested, are presented (Nutzinger 2012). All these historical pieces have shaped either directly or indirectly economic thinking on welfare and limits to growth and hence economic theory as it stands now, but they all belong to times when the “national economies” were still the main actors in international economics, and they illustrate the importance of these questions long before the present process of globalisation added substantive new and often alarming facets – both in theory and practice – to the topic.

One rather new feature at the international level is a discernible intensification of the discussion about the measurement of growth and progress as well as about the prevailing model of growth and welfare, even if it comes in waves. The 2009 Stiglitz Report in particular has supported relevant work which has been in progress in Germany already several years before and has given additional political legitimacy.

Up to now, these actual contributions and proposals of sustainable welfare and of „green growth“ have not been systematically evaluated and compared neither on a national nor on an international level. This deficit led to the elaboration of a comprehensive synopsis within the research project “Cornerstones of an ecologically sustainable welfare

concept as a basis for eco-political innovation and transformation processes” funded by the German Ministry of Environment.¹

The main aim of the synopsis was to identify differentiated and exemplary starting points for an eco-politically viable and – in the sense of the study – measurable concept of sustainable welfare. The synopsis presented here concentrates on the systematic evaluation of current discussions on alternative approaches to welfare, ecologically oriented welfare doctrines and strategies on the basis of a consistent matrix of questions. It comprises the actual discussion about alternative welfare approaches as well as about concepts and strategies of growth within ecological boundaries. More than 30 quite divergent contributions were evaluated (cf. sections 2.2. & 3). The synopsis focuses on a systematic investigation along a coherent matrix of analysis (cf. section 2.1) which comprises the whole suspense from relevant environmental targets through their foundation and measurement in environmental economics up to political processes of political transformation.

On the one hand the synopsis makes clear that “green” growth and economic activity, a comparatively new concept, has made it in the meantime onto the academic and political agenda. It has become part of the thinking of traditional economists and of political decision-makers, as is shown inter alia by the EU 2020 strategy of the EU Commission and the studies by OECD and UNEP from spring 2011. On the other hand, many of the reform concepts which have been evaluated, analyse the very complex relationships between economics, environment and society only from a rather simplified perspective, if at all. Their empirical foundation is often only partially analytic. Where the environmental target system is concerned, the majority of the contributions evaluated focus on the 2-degree climatic target. They often also reflect only particular facets of a conclusive welfare concept based on planetary boundaries.

It is against this background that we formulate within section 4 key points of a sustainable welfare model in ten theses. Such a model should illustrate the environmental policy by showing its effect on people’s welfare and the use of the natural world and should assist national environmental policy in its decision-making.

¹ Meyer, Bernd, Diefenbacher, Hans, Zieschank, Roland & Ahlert, Gerd (2012a): [Synopsis aktuell diskutierter Wohlfahrtsansätze und grüner Wachstumskonzepte](#). Studie I im Rahmen des Projektes "Eckpunkte eines ökologisch tragfähigen Wohlfahrtskonzepts als Grundlage für umweltpolitische Innovations- und Transformationsprozesse" für das Bundesumweltministerium, ffu Report 03-2012, Berlin.

Meyer, Bernd, Ahlert, Gerd, Zieschank, Roland & Diefenbacher, Hans (2012b): [Synopsis aktuell diskutierter Wohlfahrtsansätze und grüner Wachstumskonzepte - Zentrale Ergebnisse im Überblick](#). GWS Discussion Paper 12/4, Osnabrück.

2. THE UNDERLYING CONCEPT OF THE SYNOPSIS

2.1 THE MATRIX OF QUESTIONS FOR THE SYNOPSIS

The systematic evaluation of current reform approaches and “green” growth, steady state or de-growth models was carried out on the basis of a common matrix of questions which contains 16 criteria.

Criteria 1 to 4 are to give indications on the range of the evaluated reform approaches with regard to possible targets.

1. Which environmental targets are addressed?
2. Contribution to problem solving – reduction of physical impacts?
3. Contribution to problem solving – welfare benefits even without growth?
4. Contribution to problem solving – avoiding negative social implications?

Criteria 5 to 7 are related to a possible structural change in the economy.

5. Are the effects on employment and jobs addressed?
6. Is structural change in sectors and/or regions or are specific industries looked at?
7. To what extent are globalisation processes taken into account?

Criteria 8 to 10 contain questions about threats to the welfare of society which may be concealed or underestimated in many cases.

8. How is the danger to welfare through defensive costs dealt with?
9. How is the danger of increasing resources and energy costs dealt with?
10. How is the danger to welfare taken into account which is caused by “pseudo-welfare” as a result of over-indebtedness?

Criteria 11 and 12 address the measurement of growth and welfare. (Indicator systems are examined more closely in Part 2 of the project where the National Welfare Index has been developed further.)

11. How are the benefits of and damages to welfare discussed on a conceptual level?
12. What is the role of measurement systems and indicators?

Criteria 13 to 16 are intended to offer suggestions concerning institutional foundations and political constellations which could be important for a sustainable welfare concept.

13. Which players and institutions are involved and affected?
14. What is the state of practical implementation of the welfare concept?
15. Which special factors affect its implementation (opportunities, obstacles)?
16. Has the interference with the economic system been addressed?

To sum up, this list of criteria serves the following central functions: It allows

- A) a comparative assessment of the different concepts (albeit without any claim of a scientific comparative study)
- B) an evaluation of welfare concepts respecting their relevance for the design of basic patterns of a national welfare model
- C) to reveal positive examples as well as innovative approaches – be it only with respect to particular criteria
- D) a preselection of approaches well before the concrete evaluation in detail which is important as not all potentially relevant concepts are sufficiently elaborated.

2.2 AN OVERVIEW OF THE REFORM CONTRIBUTIONS EVALUATED

The following list gives an overview of all important contributions to new concepts of welfare and “green” growth which have been considered in the study. All contributions scrutinized here share the basic feature that they go beyond traditional growth concepts that had been characteristic for the EU’s Lisbon Strategy and the economic stimulus programmes in the wake of the 2007/8 financial and trade crisis. Therefore, the actual synopsis concentrates on the central publications in the sphere of the debates on “green growth”, “zero growth” and “degrowth”. Approaches of “zero growth” and “degrowth”, that are partly critical of the market system and partly oriented towards public welfare, had an equal right to be included into the study. They not only serve to round off the spectrum of alternative approaches to the prevailing growth and welfare concept, but they also help to avoid conceptual gaps. In addition to these, contributions were examined which primarily deal with problems of how to transform the present economic path towards a society living in an ecologically sustainable manner. Moreover, econometrically-shaped reform contributions to the measurement of welfare and empirically based energy environment economic (3E) modelling contributions have been taken into account. This is because empirically based model-supported analysis of effects as well as monitoring of the concrete results of political measures play an important part.

New Measuring Concepts

1. France 2009: Concepts of the Stiglitz-Sen-Fitoussi Commission
2. Expertise of CAE & SVR (2010): Economic performance, quality of life and sustainability: a comprehensive indicator system
3. Bhutan: Happiness criteria as an idea of society and conceptual basis for measuring welfare or well-being
4. United Kingdom: NEF welfare concept as a basis for the measuring system of the National Accounts of Well-being
5. University of Leeds 2010: “Steady State Economy Accounts”

Growth-orientated “green” welfare and sustainability approaches

6. European Commission 2010: “Europe 2020 – A strategy for intelligent sustained and integrated growth”
7. USA 2007: “Progressive Growth” of the Center of American Progress
8. OECD concepts since 2008: “Towards Green Growth”
9. United Kingdom 2008: Green New Deal Group
10. UNEP 2009: “Global Green New Deal”
11. Böll Foundation 2009: “On the Road to a Green New Deal”
12. UNEP since 2009: Green Economy Initiative
13. South Korea since 2008: “Low Carbon Green Growth Strategy”
14. Germany 2007 & 2009: “GreenTech – Made in Germany 2.0”
15. Canada 2010: “Climate Prosperity Initiative” from NRTEE
16. WBCSD 2010: “Vision 2050: The New Agenda for Businesses”

Zero-Growth oriented “green” welfare and sustainability approaches

17. USA: Ideas of the “New Economy Working Group”
18. Jackson 2009: “Prosperity without growth”
19. Victor 2008: “Managing without Growth – Slower by Design, not Disaster”

“Green” Transformation Strategies

20. Wuppertal-Institute 2008: “A Germany fit for the future in a globalised world”
21. BUND position paper 2011: “Economic growth or sustainable development?”
22. Böll Foundation 2010/11: “The Big Transformation – Greening the Economy”
23. Austria 2009: Results of the Conference of the Austrian Federal Ministry of Agriculture, Forestry, Environment and Water Management (“Ministry of Life”) “Growth in a changing world”
24. WBGU 2011: “The Changing World – a social contract for a great transformation”

Degrowth approaches based on public welfare

25. Ireland since 1998: Presentation by FEASTA
26. Germany: Approaches to “Post-growth economics”
27. France: Décroissance (de-growth)
28. Spain and Italy: De-growth concepts
29. Latin America since 2008: „Buen Vivir“-Approaches to intelligent de-growth-concepts

Empirically founded 3E modelling contributions

30. Jaeger et al. 2011: A New Growth Path for Europe. (GEM-E3)

31. Lutz & Meyer 2009: Environmental Tax Reform in the European Union. (GINFORS)
32. Barker et al. 2011: Modelling an ETR for Europe. (E3ME & GINFORS)
33. Meyer 2012: Macroeconomic Modelling of Sustainable Development [MacMod]. (E3ME & GINFORS)
34. Stocker et al. 2011: Auswirkungen einer anhaltenden Wachstumsschwäche. (e3.at) [Consequences of a lasting weakness of growth]
35. Distelkamp et al. 2010: Ökonomischen Effekte einer forcierten Ressourceneffizienzstrategie (PANTA RHEI) [Economic impacts of a forced strategy towards increased efficiency of resources]
36. Lehr et al. (2012): Volkswirtschaftliche Effekte der Energiewende: Erneuerbare Energien und Energieeffizienz. (PANTA RHEI) [Macroeconomic effects of the energy turnaround]
37. Bilancini & D'Alessandro (2010): Long-run Welfare under Externalities in Consumption, Leisure and Production

3. CLASSIFICATION OF THE REFORM APPROACHES EVALUATED

In order to classify the broad variety of evaluated reform approaches in a transparent manner, the following illustration condenses the results of the synopsis of alternative growth and welfare approaches into a three-dimensional result space.¹ It is based on the allocation of the dimension “social justice” on the horizontal x-axis, the dimension “growth” on the vertical y-axis and the dimension “ecological viability capacity” on the z-axis which goes into the centre of the figure. Within the space of results, the contributions attributed to “Green Growth” can be located inside the cuboid Q1 whereas the contributions addressed to “Degrowth” are to be found in the cuboid Q2. The “Zero Growth” approaches analysed in the synopsis belong the transition area between the cuboids Q1 and Q2.

Approaches 1 to 6 shown in Figure 1 can be classified in the cuboid Q1. The “Europe 2020 Strategy” (Approach 1) of the European Commission (2010) stands for further development of hitherto prevalent views on economic growth and gives priority to sustainable growth on the basis of a resource efficient, more ecological, more competitive economy. It is already a politically high-ranking legitimate programme and can be regard-

¹ In a preparatory screening for the synopsis, contributions which had insufficient content and/or elaboration were rejected. In general, approaches which had conceptual and/or methodical similarities were assessed together. For example, these include the individual green new-deal approaches (9 – 11), the degrowth approaches (26 – 28) and the empirically based modeling approaches founded on economic theory (30 – 37).

ed, at least from the viewpoint of the project, as an accepted modification of the *status quo*.

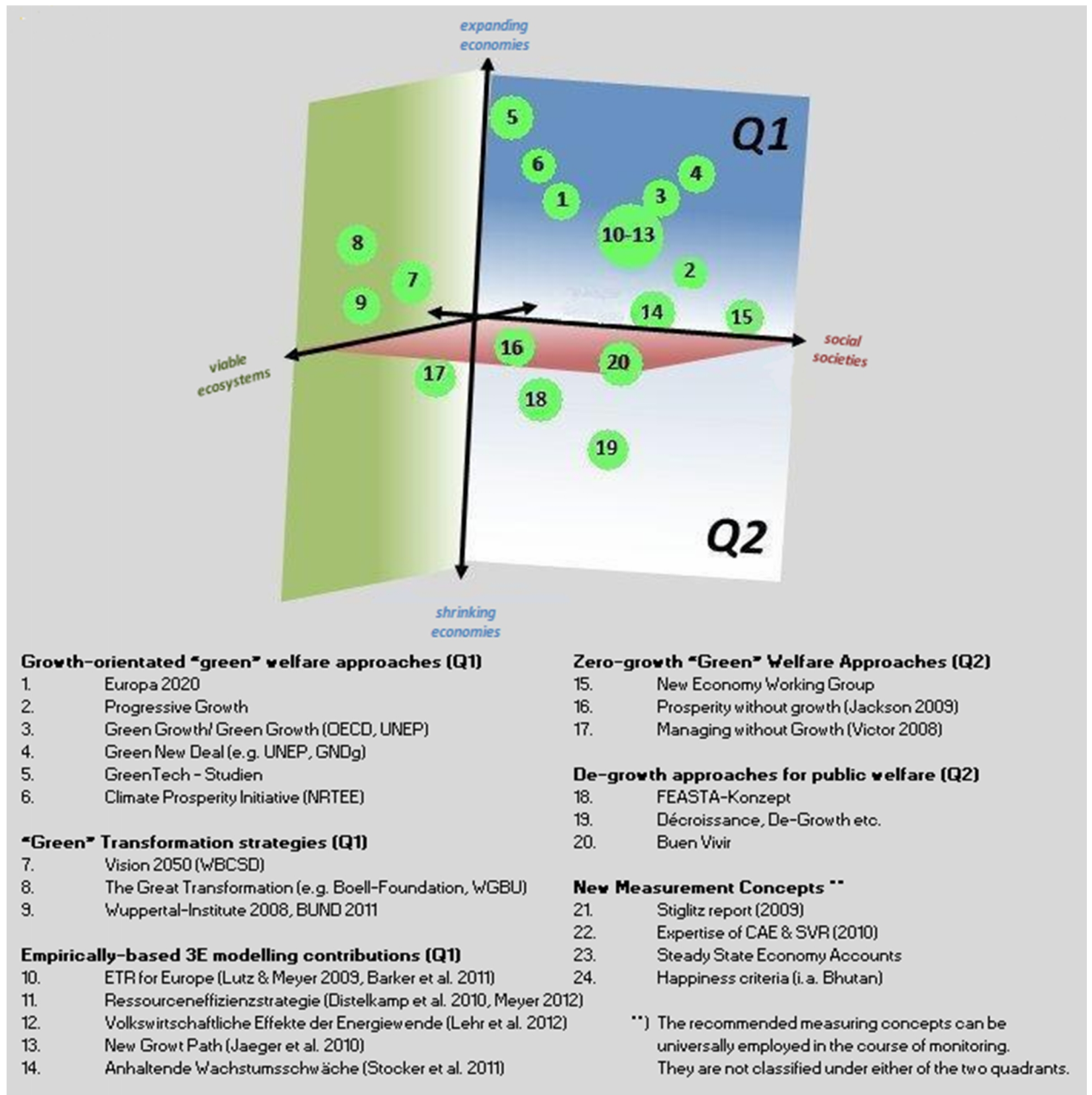


Figure 1: Schematic Overview of the Results of the synopsis of reform approaches currently under discussion

The US American study "Progressive Growth", published in 2007, is much more strongly committed to the idea of growth, but does develop *inter alia* an independent ecological strategy. In contrast to the "green" growth concepts, this approach gives a great deal of attention to the social dimension - even against the specific US American background. Approaches 3 to 6, which are explicitly devoted to the international discussion line of "green" growth concepts, stand for a refocused growth and welfare model which sees a way out of the current economic crisis and of threatening future slowdowns in growth by means of (ambitious) environmental targets, through investment in cleaner technologies

and products which also are intended for export. They aim at restructuring towards an ecological and social market economy.

Approaches 7 to 9 also place importance on a “green” economy but emphasize either the need for a deep restructuring of economy and society (key word “transformation”) or they do not share the frequent urge for economic growth and therefore tend towards parts of the steady state perspective critical of growth. There are admittedly overlapping areas with the approaches to a “Green New Deal” (4) and to “prosperity without growth” (16). These approaches are united by a more comprehensive view of changes to society, the focus moves from the economic discussion more towards an ecological, climate protection oriented, political argument about why previous expectations of permanent economic growth are to be abandoned and why a thorough-going transformation of society appears indispensable. The guidelines for sustainable development are also explicitly used in argument.

Approaches 15 to 17 take a position considerably further away from the growth paradigm. They are based on the common recognition that overall further economic growth either cannot be assumed (e.g. Victor 2008) or should not be assumed (Jackson 2009). They refer more or less explicitly to the ideas of Herman Daly, who examined the necessity for and achievability of “steady state” economies. This explains their classification in the transitory area between blocks 1 and 2.

Approaches 18 to 20 from the sphere of degrowth and post-growth “movement” are to be placed in cuboid Q2. Within these approaches to reform, the implications for the economy, society and state are comparatively drastic. The concept of sustainable development suggested by FEASTA in Ireland (Approach 18) and the de-growth approaches so far primarily discussed in Spain and Italy (Approach 19), along with the ideas of “buen vivir” in Latin America (Approach 20), open up completely to new perspectives compared with thoughts in Germany up to now. Thoughts on the need for a shrinking in the economy are based on the assumption that efforts made up to now to decouple economic growth, the use of resources and environmental pollution in any particular year may possibly show a certain effect, but are overshadowed due to quantitative growth in the following period as well as by rebound effects.

Modelling contributions 10 to 13 evaluated in the course of the synopsis show that the policy strategies of cuboid Q1 – as they are *inter alia* also proposed in the growth-orientated “green” sustainability approaches – can simultaneously achieve promising economic, ecological and possibly also social aims. Approach 14 analyses the effects of an economy with extremely low growth. With regard to the achievement of economic, ecological and social aims laid down, the empirically-based 3E modelling contributions offer a first impact assessment for the instruments and measures seen as sensible in the reform approaches. The report of the Stiglitz Commission (2009, p 263) also mentions the need for such model-based projections of alternative future paths of development; “*Measuring sustainability differs from standard statistical practice in a fundamental way: to do it adequately, we need projections, not only observations.*”

Among the “new measuring concepts”, reform approaches 21 and 22 stand for a development of the ideas prevalent up until now regarding the measurement of welfare. Both the Stiglitz Report published in 2009 and the joint expertise of CAE and SVR (2010) can, at least from the point of view of the project, be regarded as accepted modifications of the

Status Quo. Related to alternative elaborations which sound sceptically-minded towards the traditional concept of growth, they take, however, the position of a reference model. Both approaches require that more attention should be given to the socio-economic and sustainable dimension of welfare including the distribution of income, social justice, quality of life, a higher profile for a micro-economic perspective and financial and ecological sustainability as essential parts of statistic reporting. Approaches 23 and 24 are founded on the need for opting out of the current growth orientation. In both alternative measuring concepts, the GDP loses its importance as “the” headline indicator of economic and societal progress. In the “steady-state economy accounts” conference report (23), the supplementary development of ecological and social reporting systems is demanded. All the indicators and indices they contain should be equipped with clear targets and time guidelines for achieving the formulated aims. In approach 24, personal and social contentedness (keyword: “Gross National Happiness”) take a central place in the monitoring.

4. CONCLUSIONS REGARDING INDIVIDUAL CRITERIA OF THE SYNOPSIS

- **Which Environmental Aims are addressed?**

The majority of the existing reform approaches (especially those from the area of so-called “green” growth concepts) make statements concerning climate change which are mostly substantiated. In the sense of a mission statement for a sustainable development, formulated resource targets are very much less frequently discussed, even if the limited nature of resources and relevant decoupling targets usually are mentioned in the studies, at least in a general way. Ecosystem targets, however, are addressed only implicitly – if at all. Biodiversity targets are not substantiated (except: SVR & CAE 2010). The conservation of biodiversity is hardly addressed at all, and if so, only in an overall environmental system context. It is also to be stressed that conflicts of aims between the individual targets only very rarely play a role (inter alia Meyer 2010, 170seq).

THESIS 1: A *national* welfare concept based on ecological capacity limits should substantiate at least the four target areas of *climate, resources, surface areas and ecosystems* and operationalize these through measurable indicators. For the target area of ecosystems, individual and measurable targets should be laid down for soil, agro-ecosystems, forest and urban ecosystems, ground water and bodies of water. These targets should also take into consideration interactions in biodiversity.

Contribution to problem solving – fewer physical interventions?

Many of the reform approaches evaluated in the study dispense with any explicit discussion of this aspect. Where it is addressed in detail, it is usually related to the presentation of economic instruments which can successfully be deployed in order to reduce the number of physical interventions. Statistical evidence is rarely substantiated by means of indicators. To this end, CAE & SVR (2010, 147f) propose the following two indicators for the measurement of sustainability in using non-renewable resources: (1) the productivity of

resources (measured as a quotient of the gross national product (GNP) and the direct material input (DMI)) and (2) the consumption of raw materials (measured as the domestic material consumption (DMC) per head of population). Both of these suggested indicators, however, ignore the “ecological backpacks” which accumulate in the course of the global division of labour. These can be calculated *inter alia* by using the indicator TMR (total material requirement) (see also Meyer et al. 2012). This indicator measures the annual total of natural materials which is moved by technical means, measured in tons per year, and shows how much renewable and non-renewable resources are consumed by an economy. It also includes the resource consumption or “ecological backpack” of all goods imported into a country (so-called hidden flows) and takes into account the erosion of fertile land. Here it has admittedly to be borne in mind that the “hidden flows” can often be calculated only with very large degrees of data uncertainty.

THESIS 2: A *national* welfare concept based on ecological capacity limits should determine the national consumption of resources comprehensively – as far as possible based on the indicator TMR. A modern welfare concept cannot avoid an overall reduction of emission levels, waste flows, and changes in the use of land.

- **Contribution to problem solving – welfare gains even without growth? Avoiding negative social implications**

Within the various “green” growth approaches (including green growth, green economy, green new deal, green recovery) there is no priority given to the topic of whether welfare gains can be achieved without growth. These studies are far more preoccupied with the attempt of demonstrating that a “green” growth strategy also stimulates additional welfare. This is especially so within the framework of the Green Economy initiative in a worldwide context (see UNEP 2011). But more recent approaches, such as the OECD Green Growth initiative (see OECD 2011), contain suggestions for measures which will lead to welfare gains – beyond the narrow classic GDP reference – possibly even without any growth impulses. The OECD recognises the importance of green growth in avoiding the risk of disruptions of economic activity related to environment or resources and of welfare losses due to environmental pollution and damages.

THESIS 3: Determinants of a *national* welfare concept based on ecological capacity limits should, along with economic growth, also be to the advancement of the state of nature and of social systems.

Is there an examination of sectoral and/or regional structural change and/or certain industries?

Structural change is examined – if at all – only at a highly aggregated level (manufacturing, construction, energy, trade, transport and other services) and is often superficially dealt with. In doing so, the “green” industries are usually examined as one separate industry that serves as a substitute to all other industries. Regional structural change is de facto discussed only if the economic effects of the proposed reform strategy unilaterally burdens individual regions (see Canada, NRTEE 2011).

Only very seldom there is an examination of the complementary relationship between the new “green” industries, old “brown” industries and service provision (both enterprise-based and consumer-related). From the viewpoint of economic statistics, any division into “green” and “brown” industries can be operationalized only with considerable expense, but this fact is not mentioned at all (see BMU 2011, Jänicke & Zieschank 2008 und 2011).

THESIS 4: In any empirically based macro-economic assessment of the effects of a national welfare concept based on ecological capacity limits, the complementary interplay between the new “green” industries, old “brown” industries and service provision has to be examined in detail.

- **Are the effects on employment and jobs addressed?**

The majority of the reform approaches currently being discussed (especially those from the area of so-called “green” growth concepts) examine the possible effects upon employment. However, the results are often presented without any additional background information about the underlying methodology (such as expert assessment, model-based analysis, data sets). The presentation is very frequently limited to the development perspectives for green jobs.

THESIS 5: A *national* welfare concept based on ecological capacity limits should deduce the economic employment effects from an explanatory approach which is macro-economically consistent and sector-based. This approach also allows a first estimate of its social effects.

- **To what extent are globalisation processes taken into account?**

The majority of the politically-based reform approaches from the area of the so-called “green” growth concepts as well as those based on economic statistics (including CAE & SVR 2010), include globalisation processes as a starting point in their conceptual considerations, without examining this topic in greater depth. No in-depth analysis is made beyond the statement that globalisation and world-wide industrialisation will lead to an accelerated shortage of non-renewable resources. The aspect that with globalisation there can be a transfer of the environmental backpack at the expense of the emerging and developing countries is rarely, as in the 3E modelling studies (including Distelkamp et al. 2010) and in the “Buen Vivir” approaches, made a matter of discussion.

THESIS 6: A *national* welfare concept based on ecological capacity limits should also take into account its *global* dimensions, as goods are increasingly being imported into the highly-developed economies together with their ecological backpacks. It is the affluent and technically highly-developed states which must pave the way for a green change of direction on a global scale (French, Gardner & Renner 2009, p 7). Therefore, world-wide cooperation is indispensable.

- **To what extent are rebound effects taken into consideration?**

Rebound effects are examined in almost all reform approaches evaluated. It is, however, apparent that this aspect is discussed much more intensively and critically in the majority of approaches beyond the “green” growth concepts. The long-term success of a “green” strategy of growth is even questioned. Attempts are made to prove this with empirical findings (e.g. Jackson 2010), which generally, however, relate to a historical review of statistics or related to individual cases.

THESIS 7: The intensity of the rebound effect can be analysed only within the scope of detailed, empirically and model-based simulation calculations at a macro level that compare the rebound effects of a “business as usual” scenario with that of a “green economy”.

- **How is the risk of rising costs of raw materials and energy dealt with?**

The risk of rising costs of raw materials and energy is examined in all approaches to reform from the area of the so-called “green” growth concepts. As a solution to this dilemma there is always a general recommendation that measures should be taken in order to increase resource and energy efficiency on the part of the producers and – at least partially – on the part of the consumers.

THESIS 8: A *national* welfare concept based on ecological capacity limits should cushion the risk of rising prices for raw materials and energy through a dual strategy: both on the side of supply where companies should increase resource productivity through a strategy of efficiency and on the side of consumer demand through a sufficiency strategy based on changed, resource-saving consumption patterns.

- **Which role is played by statistical measurement of processes and indicators?**

In all, a large number of approaches - except for the purely environmental technical concepts, the South Korean approach, the US-CAP study and the New Green Deal approaches - have recognised the need for monitoring and the use of indicators for detecting social changes. Nine of the approaches evaluated refer to indicator systems developed elsewhere; some of the concepts plan to deal with indicator systems in the future (including the EU-2020 strategy). Nevertheless a whole string of welfare concepts do not touch at all on the topic of *alternative* monitoring systems or measuring processes. Above all there are approaches which attempt to achieve growth impulses through modern environmental technology, and they often take the traditional macro-economic indices as the yardstick of their success. This, however, does not apply to the OECD Green Economy Initiative which presents its own comprehensive suggestions for the fields of indicators and also stresses the central role of political information, to accompany actively the restructuring process and its evaluation.

THESIS 9: A national welfare concept should also include a comprehensive monitoring system which uses appropriate ecological and societal indicators to evaluate the

preservation of ecological capacity limits. In conjunction with statistical offices, a further indicator to measure ecologically viable development of welfare should be established. An example of such a welfare index which already exists would be the National Welfare Index (NWI).

- **Which special factors are decisive for implementation?**

The majority of reform contributions and strategies of sustainable welfare and “green growth” emphasize that any successful implementation of the political measures proposed should be continually applied for a long period and adapted to the specific national context. In addition, the implementation strategy should be pragmatic and able to react to changes in a flexible way. The integration of individual measures should take place in dialogues involving national, regional and sectoral decision-makers and representatives of interests.

THESIS 10: A *national* welfare concept based on ecological capacity limits can be successfully implemented only in a long-term and continuous process oriented towards environmental targets and accepted by society. It avoids fundamental intervention in the economic order (e.g. tariff autonomy, price fixing) and uses, *inter alia*, eco-political instruments in line with the markets and adapted to the specific national context of a player-focused process of coordination.

5. OVERALL CONCLUSION AND OUTLOOK

First: In the meantime, green growth and green economic activity, two comparatively new concepts, have reached the status of an agenda in the thinking of mainstream economists and of practical decision-makers. This is illustrated not only by the studies of OECD and UNEP from spring 2011 and by the activities in individual states (South Korea and Germany as leading exporters of environmental technology and products), but similarly in parts of the EU Commission with its EU 2020 strategy. In this context, an overall acceptance of strategies of resource and energy efficiency can also be observed. The synopsis has shown, however, the following results in the contributions to reform that have been evaluated:

No far-reaching substantiation of ecological targets has taken place beyond reference to the consideration of global stress limitations and the 2 degree climate target agreed by the international community for 2050. There is also a correspondingly large deficit of related indicators, with the exception of the OECD Green Growth concept;

apart from few exceptions, there has been no recommendation for a systematic monitoring of the compliance to environmental targets, not to speak of an alternative welfare-orientated measuring concept;

important system interrelationships between environment, economy and society are often only partially examined in an analytical manner;

only rarely a comprehensive (i.e. model and macro-economy based) environmental

economic analysis has been carried out;

the processes of adaptation at sector and industry level are only represented in a very simplified manner, if at all.

The significant tendency accompanying globalisation in Europe, namely the substitution of direct material input in favour of imported goods, is examined only very selectively. For instance, no notice is taken of the corresponding material input and resulting ecological backpack which arises effectively outside Europe, above all in the emerging and developing countries.

Second: In general, the idea of an economy with marginal growth rates or even “zero growth” (in Fig. 3.1 Approaches 15 to 17) causes drastic fears among mainstream economists because the lack of quantitative growth carries the danger of incalculable collapse and social and democratic instability.

Against this background, the possibility of a “low growth” path drawn up by Victor (2010) for Canada represents an interesting alternative as it presents politics with the challenge of tackling poverty, national debt and employment not only with overall economic growth, but also by setting up targeted and separate programmes. There is, however, a reservation about the methodology of the study: Due to the very simple structure of the underlying low-growth model which neglects global economic and sectoral industry interdependency as well as the effects of prices, the model-based results must be questioned. Comparable considerations of a slowly growing economy can also be found in more complex structure models, as shown by the studies of Stocker et al. (2011).

Meanwhile it is to be accepted from an ecological viewpoint that even in a state of zero growth the production of waste and emissions and the intensive exploitation of land, natural resources and eco-systems will continue and can possibly add to the existing environmental stress. The process of accumulation in the soil, in the seas and in the atmosphere (greenhouse gases) with persistent materials or those difficult to decompose is even unavoidable. In this field, an extraordinary conflict with previous ideas of growth is to be seen. In this respect these approaches, too, have an increased energy and resource efficiency as important targets.

Third: This area of conflict will continue to intensify, if in view of the environmental stress which is repeated year in, year out (practically doubling), a global reduction in economic growth is seen as unavoidable.

Such a conclusion is already imposing itself in view of the results of ecosystem research on ecological capacity, although statements about this topic are rarely made this way. But the various approaches arguing in favour of de-growth also say that gains incurred due to increases in resource efficiency can only bring relief if the economy is showing zero growth (in Fig. 3.1 Approaches 18-20). Connected with this are often controversial suggestions on the reduction of material throughput, for example through massive limitations on advertising which encourages consumerism, overexploitation of natural resources and international trade (keyword: move away from “free trade” through limiting the distance at which trading is done, reducing the volumes and forbidding trade of waste materials).

In a next step, the cornerstones which have been identified will be used to develop a *decision-making model for an ecologically viable environmental policy*. Along with the depiction of the basic structures of a sustainable welfare model at national level, central eco-political starting points of an ecologically viable welfare concept are being drafted. The aim is not to work out an optimal environmental strategy or even a comprehensive “transformation roadmap” but rather the preceding necessary orientation related to the appropriate decision-making method.

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