



Implications of a persistent low growth path A Scenario Analysis

WP 1: Literature Review and Expert Interviews

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Version 31 July 2010

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1 Motivation of this paper

This paper provides the starting point of an ongoing research project that analyses the macro-economic implications (on employment, consumption, income, public finances, resource use, CO₂-emissions etc.) of a persistent low-growth path for the Austrian economy and society.

A persistent decline in economic growth has not yet been analysed in depth. Scientific literature on this issue is sparse. Mainstream economists have analysed low or no-growth economies in recessions and depressions but mostly focusing on fast economic recovery. Representatives of “downshifting” have assumed the position of individuals and minorities but implications for the entire economy and society are mostly neglected. So-called ‘growth pessimists’ (Steurer, 2001) usually focus on resource issues and less on economic questions. This means, there is not yet a comprehensive macroeconomic theory and no model that delivers economic stability without growth in consumption and production that remains within the ecological capacity of our planet.

This study intends to fill some of these gaps. As a start, this paper summarizes the key findings of a literature review and several expert interviews. The purpose of this literature review is three-fold: First, it comprises information about the potential causes for low growth. Second, it deals with the economic and environmental consequences of low-growth scenarios. Third, it focuses on potential strategies and measures that could help to reorganize our economic system in order to deliver sustainable development that we understand as “a dynamic process which enables all people to realize their potential and to improve their quality of life in ways that simultaneously protect and enhance the planet’s life-support systems” (Forum for the Future, 2000). While reasons and measures are analysed in more depth, this paper focuses to a lesser extent on consequences. Seven expert interviews were conducted (for details see Annex 2) in order to enrich this analysis with knowledge and thoughts of renowned experts.

Overall, the review addresses the often cited assumption that several current economic, social and environmental developments might bring economic growth to a halt. Our basic assumption is that low economic growth rates will be the normal case and not the exception in developed economies in the near and also in the far future. Without appropriate responses and concepts to face this situation, severe social consequences – first and foremost rapidly rising unemployment – could cause large losses of welfare.

This analysis ultimately aims to provide inputs for the development of scenarios that are able to analyze the implications of a persistent low growth path for the Austrian society.

2 Some causes for low growth

We present in this section a series of arguments why unlimited growth might not be possible in the long term. Generally speaking, it is the ecological economist’s tradition which assumes that indefinite growth is unrealistic in the long term.

Mainstream macroeconomic theory is profoundly oriented towards an assumption of continuous, exponential GDP growth. Disruptions in economic activity, such as expansions and recessions, are perceived as deviations from the standard conception of a long-term stable macroeconomic growth path. Neoclassical economics has generally rejected the concept of limits to growth. Environmental degradation such as declining fish stocks or biodiversity loss have been accepted as significant problems, but are usually not seen as serious threats to the continuation of global economic growth. What has to be achieved is to ‘get the prices right’ in order to internalise external costs and to decouple economic growth from negative environmental impacts. Economic growth is seen as a prerequisite for achieving rapid technological change that leads to a development in which economic performance and environmental impact is no longer inter-linked.

In sharp contrast, ecological economists are skeptical about the feasibility to dramatically change technologies, investment and consumption patterns in a way to decouple economic

growth from environmental impact. They argue that several reasons imply limits on economic scale and thus limits to growth. The following assumptions of low growth rates in the future thus reflect the ecological economics debate and are also partly the result of considerations that arose from the initiative "Growth in Transition" (see www.growthintransition.eu).

Generally speaking, economic growth is mainly driven by increases in supply and demand factors. If these factors cease to grow, economic growth will decline.

2.1 Use of natural resources

Many authors have been pointing out that economic growth is positively correlated with the use of natural resources and that the economy is operating on a scale and in an intensity that cannot be sustained by the carrying capacity of our ecosystem in the long run (cf. e.g. Arndt, 1978; Hamilton, 2003; Porritt, 2007; Victor, 2008; Jackson, 2009). Thus, the increasing use of natural resources and resources scarcities that go along with it may put a limit to economic growth in the medium term.

Absolute levels of resource and energy use are constantly rising due to the requirements of a growing world economy. Growing availability of natural resources – especially cheap fossil fuels – enabled the high growth rates of the last decades. In other words: resources fuelled the economy. Between 1980 and 2005, global extraction of abiotic (fossil fuels, minerals) and biotic (agriculture, forestry, fishing) resources increased from 40 to 58 billion tonnes. Scenarios anticipate a rise of total used extraction of around 80 billion tonnes of resources by 2020 (200% of the amount in 1980) in order to sustain worldwide economic growth (Giljum et al., 2008).

Evidence is growing that pressure on the availability of natural resources is causing a strain on both the environment and the economy. If we assume that capital cannot substitute for resources because there are certain functions that the environment performs that cannot be duplicated by humans ('strong sustainability'), a decline in resource availability will affect future potentials for economic growth.

For various commodities, the peak of extraction has already been reached or is about to be reached (Heinberg, 2007; Gleick and Palaniappan, 2010; Hirsch et al 2005; Kerschmer und Hubacek 2007; McKillop 2006). Although the financial crisis and the recession brought a significant decline for the oil price to below US\$ 40 per barrel, the fuel crisis remains real. Peak oil is certainly approaching. In July 2007, IEA predicted an oil crunch by 2012 and projects the oil price to reach US\$200 per barrel by 2030 due to rapidly increasing demand in contrast to increasingly constrained supply. The implications of peak oil might be a dramatic drop in supply and a rapid rise in unemployment. We might however also face the paradox possibility that oil exporting countries react to increasing oil shortages by flooding the market with large amounts of cheap oil, based on the presumption that new technologies will be able to fully substitute fossil fuels in the near future, a scenario described for instance by Hans Werner Sinn (2008).

Although the Austrian economy is increasingly service-oriented, it still depends vastly on different raw materials. Scarcity of 'critical metals' ("Gewürzmetalle") will affect the Austrian economy in ways more subtle, but farther reaching. A large number of goods of daily use and application contain small, but critical amounts of certain metals (e.g. gallium, indium, or platinum), the non-availability of which would endanger the production of a whole sector (such as mobile phones). High-tech industries, particularly the electronic industry, will be affected by declining availability of precious metals. Also the development of new eco-technologies could be slowed down by resource scarcity (European Parliament, 2009). And the EU's dependency on resource and energy imports is dramatically increasing. Without major changes over the next 20 to 30 years, approximately 70 % of the EU's energy will have to be imported. This is 20 % more than today (Rocholl et al, 2006).

These trends could not be curtailed in the past in spite of massive technological progress and improvements in efficiency. To produce one unit of added value, the needed resources and energy are about one quarter lower today than at the beginning of the 1980s. As yet the world economy grew by 96,3 % between 1980 and 2009 (IMF, 2010) these efficiency gains were over-

compensated, which led to an absolute increase in the natural resource use. Less natural resources enable less material production – if this decline is not overcompensated by technological progress. But the world economy has by now little experience with a decline of the availability of natural resources.

In order to imagine an ongoing low, zero or negative growth, there is no need for a gloom and doom scenario. The extrapolation of the current trends and economic processes is completely sufficient: price mechanisms react to the resource destruction and shortage. High resource prices go along with an increase of the production costs, by what the macroeconomic output can stall (Anderson, 2007). Rising oil prices in the 1970s had for a limited period exactly this effect on the Austrian economy.

2.2 Climate change policy

Another severe constraint for future economic activity is caused by climate change. By now, an inviolable consensus exists among climate scientists that we should aim to keep global warming below 2°C above the pre-industrial temperature to avoid economic and environmental catastrophes. The UK Government's Stern Review predicted in late 2006 that the global economy could face a climate-change bill of £4 trillion if greenhouse gas emissions are not cut deeply within the next ten years. But Stern also highlighted the opportunities of the necessary changes, which are worth over £1 trillion (nef, 2008). Referring to his 2006 report, Sir Nicholas Stern said in April 2008: "We underestimated the risks... we underestimated the damage associated with the temperature increases... and we underestimated the probabilities of temperature increases." The fourth and most recent assessment report of the Intergovernmental Panel on Climate Change (IPCC) confirmed that the warming of the climate system is clear and 'worse than we thought'.

An open question is whether climate change per se will put a severe constraint on the growth potential of the Austrian economy by 2025, especially on vulnerable sectors such as agriculture and tourism. Probably not. If climate change warnings are however taken seriously by politicians, e.g. due to increased public pressure, and thus much stricter climate change legislation enacted, this could potentially impede future growth. Climate change policies could however also have the reverse effect and act as a strong driving force for economic growth by encouraging economic restructuring and modernisation, supporting new, clean and sustainable economic activity (low carbon and resource efficient); and reducing vulnerability of the economy to climate change and other environmental impacts (and hence costs of inaction). Many studies examine the economics of climate change and their link to economic development and recovery (e.g. OECD 2008 and 2009a; McKinsey 2009; Edenhofer et al, 2009). However, there are only a few estimates of the macroeconomic impact of meeting carbon reduction targets in terms of the net effect on GDP levels (global, European or national level) and the potential level of investment required to reach the reduction levels. GHK (2009) summarizes that the overall economic impact of climate change policies is modest and that costs will be associated with the opportunity to take competitive advantage from the structural changes triggered by climate change policies.

Clear is that Austria alone will not perform stricter climate change policies if other countries do not follow the same example. The European community (in the best case the global community) has to act together to decide on binding climate change legislation to both fight dangerous climate change and to avoid carbon leakage, that is negative effects in terms of emissions increasing outside of transborder emission reduction policies.

2.3 Population growth and aging of the society

Population growth is another factor that enables economic growth. Since 1950, the Earth's population has grown two and a half times (from about 2.5 to about 6.8 billion people) (UN, 2008). Global GDP has grown nine times in this period (from 5300 to 47300 billion International Dollar) (Maddison, 2009). Per capita, this means that today one person on average produces and consumes 3.5 times more than 1950. This also means that global demand for nearly all resources increases.

If population growth comes to an end, this driver of economic growth is no longer effective. For highly developed economies we observe a stabilization of population or even decline, which will further intensify in the future. Still more considerably, the working-age population will be reduced because of demographic aging (Münz, 2007) – even though working-age will for this reason be lifted considerably. As far as this will not be compensated by technical productivity progress and immigration, the possibility to produce more – and therefore to grow – will also decline. This applies all the more to service-based economies, as services are more and more bound to persons.

2.4 Decreasing international competitiveness

Declining growth rates in developed economies can also be the result of the industrialization of emergent nations or regions like China, India and Latin America. The head start in innovations of the currently technologically superior industrial nations increasingly melts down because of “climbers”, who invest immensely in education and modern infrastructure. Following Paech (2009) this applies particularly to the area of technology and knowledge based export products. Through rising prices of resources on the world market and hence rising production costs for Western producers, the transition economies will within a short period be able to challenge comparative cost advantages of the rich industrial nations (Anderson, 2007; Paech, 2009). That could be the first phase of a “two-stage overshoot” (Anderson, 2007): first, the West loses relative cost advantages while some up-coming developing countries catch up; in a second phase, environmental factors could cause an end of growth of the world economy.

2.5 Consumer restraint

Private consumption is considered the main pillar of aggregate demand in an economy, consumer restraint therefore would have a strong negative impact on GDP growth (Marterbauer, 2007), at least in the short run. Although it is the ability to supply output that supports real GDP growth in the long run, fluctuations in demand determine the level of GDP in the short run. Consumer restraint could either be the result of people’s (voluntary) willingness to consume less or because of (involuntary) restricted consumption possibilities.

Concerning the *willingness to consume*, Hirsch already in 1977 described in “The Social Limits to Growth” that high consumption could decline after having reached a certain point. There is already talk of a trend reversal in consumption behaviour, as a part of the population has satisfied a lot of material needs. Though at a low level, it can be observed that growing population groups consciously live in a more sufficient way (Hinterberger and Pirgmaier, 2009). This could for instance occur if people withdraw from active economic life to deliberately limit their personal consumption in favour of more leisure time (e.g. Miegel, 2006; Dahm and Scherhorn, 2008). A lot of people would deliberately opt for working part-time and forgo income and hence consumption if it were firstly secured and secondly associated with less gainful employment. If a big number of people opts for voluntary simplicity, private consumption as most important sustainer of aggregate demand declines.

Concerning the *possibilities to consume* it can be observed that consumption growth in Austria and Germany has been below the long-term average in recent years. The main reasons for reduced consumption spending are a higher savings rate and zero net real income growth as a result of rising prices, especially for food and energy. Besides high inflation, high taxes might be a cause for fewer possibilities to consume.

2.6 The Inherent Decline of Growth

Economic growth also has certain limits that are inherent to the system. Empirical studies show that not exponential, but linear growth is the normal case in developed economies (e.g. Bourcarde and Herzmann, 2006). That means that nearly all European nations grow in absolute terms, but with declining per capita rates. In Austria, the produced amount of goods and services per capita has increased steadily since the middle of the 20th century, but growth rates are declining. While the Austrian economy grew by 6 % on average in the 1950s, growth fell to 4.7

% in the 1960s, 3.6 % in the 1970s, 2.3 % in the 1980s, 2.6 % in the 1990s and 2 % between 2000 and 2008 (all values are the average of the decade, according to official data of Statistik Austria). Moreover, Miegel (2009) shows that since the 1990s, the absolute increases of per capita GDP in the Western industrial countries have been declining (e.g. Germany, France, Austria, Italy, USA, United Kingdom).

2.7 The instability of financial markets

The financial sector has grown much faster in recent years than the “real” economy. This has repeatedly led to the formation of bubbles. When bubbles burst, they cause a considerable moderation of growth dynamics. The recent crisis was initially characterized by a credit crunch; that means banks stopped lending among themselves with considerable effects on both interest rates and the amount of money available for private sector loans. Lacking money for investments and high interest rates hampered economic growth. As a consequence of the crisis, governments now consider introducing measures to regulate financial markets. Possible instruments might include a European financial transaction tax (FTT) or a banking fee (IMF for instance suggested in late April 2010 a “Financial Stability Contribution” to finance future bank supports or a “Financial Activities Tax” to be levied on bank profits and remunerations). Stricter regulation of financial markets will lead to a decrease in monetary expansion, higher interest rates and consequently have a strong influence on GDP rates.

Another question in this context is if growth slumps not only occur from exaggerated financial market expectations, but also (or rather) from real economic “limits”. Breitenfellner (2009) points out: “The current financial crisis can be seen as the failure of the attempt to fight against declining growth rates”. Pushing the economy beyond its growth potential is bound to fail. It is said that the market is subjected to a “correction”. Market corrections, however, are generally fast, disorganized, un-planned and unfair, regarding the distribution of the costs and benefits. Corrections often overshoot, creating a downward feedback loop rather than simply a realistic adjustment (Anderson 2008). The eventual effects of the crisis are still not known yet. Nevertheless, we painfully realize today that the growth of last years was probably not economically sustainable – ecological and social aspects left aside.

2.8 Debt

Massive government debts might be another reason for low growth in coming years. A big challenge for future economic output of most economies stems from the fact that debt levels have consistently grown at a faster pace than GDP. Based on data from the Economist and the Institute of Integrated Economic Research (IIER), Richard Douthwaite (2010) illustrates that world debt has grown 250% in the past decade, from 18 trillion dollars in 2001 to 45 trillion dollars in 2011. Emerging economies were able to decrease their debt/GDP share from 49% to 45% but advanced economies have increased their debt/GDP share from 72% to 150% in recent years. Some countries’ debt has already become unsupportable; some countries have reached levels close to their theoretically sustainable maximums. IIER (2010) describes the consequences as twofold: growing defaults of debt once it reaches unsustainable levels, and the inability to grow debt further, which in turn limits economic growth.

Most of the issues explained above can also be interpreted in a way to boost economic growth (e.g. climate change policy may also act as a driver for growth) but still, taken together they illustrate why high GDP rates seem unrealistic in the long run. Collectively, these causes are severely impacting our long-term ability to sustain prosperity – the capabilities that people have to flourish (Jackson, 2009).

3 Consequences/fears

In this section we briefly discuss some consequences of low economic growth rates, viz. unemployment and changes on the labour market, public services, income situation and poverty, and environmental impacts. It has to be noted that these consequences might happen in the short

run. In the long run structural dynamics might change and also politics will presumably adapt to altering conditions.

3.1 Unemployment and changes on the labour market

A central issue raised both in the literature as well as in the expert interviews is employment. A wide shared conclusion is that full-time employment for all is hard to achieve without a growing economy. The relationship of output and unemployment was put into a numerical relationship by Arthur Okun and became known as Okun's Law, saying that for every two percent that actual GDP falls relative to potential GDP, the unemployment rate rises about one percent (Samuelson/Nordhaus, 2001). This means that actual output has to grow faster than potential output (ie faster than productivity growth) in order to decrease unemployment.

Empirical data for Austria show that Okun's Law fairly proves true for the last 50 years, that is per 1 % GDP growth, unemployment decreases by 0,5 %. However, a decline of unemployment starts at 3 % GDP growth the earliest and fundamental reductions in unemployment are only possible with "Chinese" growth rates. Overall, Okun's Law cannot do justice to the complexity of the labour market because it does not take into account the discrepancy between employment growth and a decline in unemployment (OekonomInnenzirkel, 2010).

In opposition to this dominant view, there might also be a case for labour shortages in some sectors in the future (e.g. due to demographic changes).

Besides quantitative aspects, the question about the relationship between economic growth and the quality and type of work is raised. Types of work differing from the standard employment relationship have increased, including temporary employment, part-time and low-paid employment. The question arises whether job growth under very flexible arrangements is desirable.

3.2 Public services

Another issue concerns public services. Under the current taxes and levies system, decreased tax revenues and higher expenses for unemployment benefits as a result of low growth rates mean that the government can spend less on important public services such as health and education and pension systems. This higher burden on the government is likely to narrow down the space for manoeuvre for the state, e.g. necessary investments for maintaining the social security systems and new infrastructure and urgent reforms might not be feasible anymore.

3.3 Income situation and poverty

Furthermore, several interviewees estimate that the income situation is likely to change. Incomes may decrease or stagnate, resulting in lower aggregate demand, a much lower savings rate for low and middle incomes and higher levels of poverty. Income gaps may widen due to a divergence of income and capital assets. All this might lead to higher poverty levels and social tensions on the grounds of distribution conflicts. According to an observation of the ILO, a loss of 1% in global GDP entails 20 million more people living in poverty (Breitenfellner, 2010 quoting a presentation given by Helene Schuberth).

3.4 Environmental impacts

Lower growth rates may go hand in hand with much reduced environmental impacts. Environmental pressures in terms of lower resource and energy uses and a decline in climate damaging emissions might be relieved but will however not be a sufficient response to solving the ecological crisis. The recent economic crisis serves as an example of relieving environmental pressures in times of low growth. In 2009, carbon dioxide emissions under the EU's cap-and-trade system plunged 11 per cent which was the largest one-year decline since the emissions trading system began in 2005. Some of the sharpest drops were recorded in countries worst hit by the crisis, such as Estonia and Romania, where emissions fell by 24 per cent and 22 per cent (FT, 2010).

4 New strategies for future challenges: Three recent approaches

There is not much literature to date that focuses explicitly on strategies to deal with the effects of low growth. However, if we start from an assumption of a persistent low growth path in the future, we have to think about approaches and strategies how to deal with the negative consequences of absent GDP growth. In the following, we present three first approaches of how to tackle this question: a steady state economy (Herman Daly), LowGrow (Peter Victor) and Prosperity Without Growth (Tim Jackson).

4.1 A steady state economy (SSE)

The notion of the “stationary state” economy dates back to John Stuart Mill’s “Principles of Political Economy” (chapter VI of Book IV) in 1888. Therein, Mill describes the impossibility of ultimately avoiding the stationary State. This is however not an unpleasing and discouraging prospect but “a very considerable improvement on our present condition” as a stationary condition of capital and population does not imply a stationary state of human improvement and social progress at all:

“If the earth must lose that great portion of its pleasantness which it owes to things that the unlimited increase of wealth and population would extirpate from it, for the mere purpose of enabling it to support a larger, but not a better or a happier population, I sincerely hope, for the sake of posterity, that they will be content to be stationary, long before necessity compel them to it.” (Mill, 1888: 2).

Former Senior Economist at the World Bank Herman Daly has advocated “steady state” economics for many years. He defines a SSE as “an economy that maintains a constant metabolic flow of resources from depletion to pollution: a throughput that is within the assimilative and regenerative capacities of the ecosystem” (Daly, 2010). It’s a system that permits qualitative development but not aggregate quantitative growth. “Growth is more of the same stuff; development is the same amount of better stuff (or at least different stuff)” (Daly, 2008: 1).

For Daly, economic growth already has become uneconomic as the quantitative expansion of the economic system increases social and environmental costs faster than production benefits, making people poorer not richer. Ecological economists have offered empirical evidence for uneconomic growth in high consumption countries (see Ecological Footprint, ISEW, GPI, Happy Planet Index).

Daly’s main point of critique refers to the absence of any notion of optimal scale in macroeconomics. Scale has become important because the economic system has grown to a point where its physical demands on the ecosystem are far from trivial. Macroeconomic theory has disregarded scale in two ways: first, by assuming that environmental sources and sinks are infinite relative to the scale of the economy. Second, by assuming that scale is total rather than infinitesimal, i.e. that nature is just one more sector in the economy and that all micro-allocative decisions for each resource includes the in natura use among the set of alternative uses. Given these assumptions, there is no separate macro issue of scale, and no policy instrument needed to manage scale (Daly, 1992).

Alongside optimal scale (sustainability), Daly concludes that for any model to work allocation (efficiency) and distribution (justice) are equally important. These three parts shape the fundamental economic problem.

Just like Mill, Daly believes that society would benefit to establish a SSE before it is inevitable. He (2010) puts forward ten specific policy proposals for moving to a SSE:

- 1 Cap-Auction-Trade Systems for Basic Resources
- 2 Ecological Tax Reform
- 3 Limit the Range of Inequality in Income Distribution
- 4 Free Up the Length of the Working Day, Week, and Year
- 5 Re-Regulate International Commerce
- 6 Downgrade the IMF/WB/WTO

- 7 Move Away from Fractional Reserve Banking Toward a System of 100% Reserve Requirements
- 8 Stop Treating the Scarce As If It Were Non-Scarce, but Also Stop Treating the Non-Scarce As If It Were Scarce
- 9 Stabilize Population
- 10 Reform National Accounts.

Daly explains that – while these policies might appear radical– it is worth remembering that they are amenable to gradual application. Also, they are based on the conservative institutions of private property and decentralized market allocation.

4.2 LowGrow – a macroeconomic model for the Canadian economy

Canadian economist Peter Victor designed the interactive systems model “LowGrow” of the Canadian economy to specifically answer the question: can we have full employment, no poverty, fiscal balance, and reduced greenhouse gas emissions without relying on economic growth? The figure below shows the simplified structure of LowGrow.

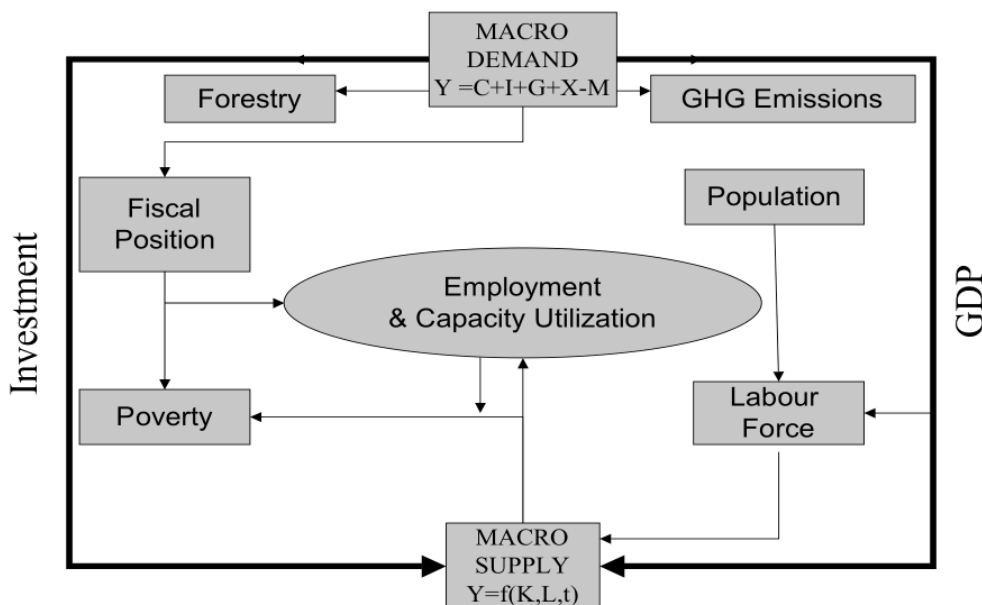


Figure 1: High level structure of LowGrow (Victor, 2008a: 171)

Aggregate demand (GDP, shown as Y) is determined in the normal way as the sum of consumption expenditure (C), investment expenditure (I), government expenditure (G), and the difference between exports (X) and imports (M). Macro Supply is estimated by a Cobb-Douglas production function, in which output (GDP) is a function of employed labour (L), employed capital (K) and a time variable (t) that represents changes in productivity.

While LowGrow lacks some features (e.g. for simplicity there is no monetary sector in the model), it includes others that are extremely useful in exploring low or no growth scenarios such as carbon dioxide and other greenhouse gas emissions, a carbon tax, a forestry sub-model, provision for redistributing incomes and the UN’s Human Poverty Index etc.

By simulating a variety of scenarios for the Canadian economy, Victor (2007, 2008, 2008a) tried to close a gap in the growth-skeptical literature, which had not worked with such a model before. He shows that ‘no growth’ can be catastrophic if not implemented carefully, leading to disastrous results as exploding unemployment and debt, strongly increased poverty and only a slightly positive effect of reduced GHG emissions. But he also demonstrates that slower growth (leading to stability around 2030) can be consistent with attractive economic, social and envi-

ronmental outcomes: full employment, fiscal balance, considerable reduction in greenhouse-gas emissions, near elimination of poverty, and more leisure. The difference between the scenarios is striking and the question emerges what makes the difference. The answer is that the better no/low growth scenario(s) result from a wide range of policy measures. In summary these policy measures include (Victor 2008):

- **Investment:** reduced net investment, a shift from investment in private to public goods through changes in taxation and expenditures.
- **Labour force:** stabilization through changing age structure of the population and population stabilization.
- **Population:** stabilization through changes to immigration policy.
- **Poverty:** trickle down replaced with focused anti-poverty programs that address the social determinants of illness and provide more direct income support.
- **Technological change:** slower, more discriminating, preventative rather than end of pipe, through technology assessment and changes in the education of scientists and engineers.
- **Government expenditures:** a declining rate of increase.
- **Trade:** a stable, positive net trade balance (and diversification of markets).
- **Work week:** shorter, more leisure through changes in compensation, work organisation and standard working hours, and active labour market policies.
- **Greenhouse gases:** a revenue neutral carbon tax.

To complement these policies:

- **Consumption:** more public goods fewer positional (status) goods through changes in taxation and marketing.
- **Environment and resources:** limits on throughput and use of space through better land use planning and habitat protection and ecological fiscal reform.
- **Localization:** fiscal and trade policies to strengthen local economies.

Victor's scenarios show the possibility of achieving positive results for main social, economic and ecological policy goals without ongoing economic growth in a macroeconomic model and therefore foster the challenging of economic growth as a self-contained policy goal. Victor is currently working on further elaborating the LowGrow model.

4.3 Prosperity Without Growth

The UK Sustainable Development Commission launched the project "Redefining Prosperity" to look into the connections and conflicts between sustainability, growth, and wellbeing. After a two year work programme including commissioned thinkpieces, organised seminars, and invited feedback the results were compiled in the report "Prosperity without Growth?: the transition to a sustainable economy" by SDC's Economics Commissioner Tim Jackson. One of the most important messages from his analysis is the call for a robust macro-economics for sustainability. Jackson highlights that a different kind of macroeconomics that does not rely on ever-increasing consumption growth and that remains within ecological scale is urgently needed but that virtually no attempts have been made to develop and economic model that does not rely on growth. He refers to Daly's pioneering work to develop the ecological conditions for a SSE, but criticizes the missing ability to establish economic stability under these conditions. As the most notable exception he mentions the work being done by Peter Victor who shows that even in a rather conventional macroeconomic framework, a new macro-economics for sustainability is not only meaningful but also possible.

Jackson concludes by proposing twelve steps towards a sustainable economy that fall into the

three broad categories “building a sustainable macro-economy”, “protecting capabilities for flourishing”, and “respecting ecological limits”:

Box 1: Steps to a Sustainable Economy

Building on a sustainable macro-economy

Debt-driven materialistic consumption is deeply unsatisfactory as the basis for our macro-economy. The time is now ripe to develop a new macro-economics for sustainability that does not rely for its stability on relentless growth and expanding material throughput. Four specific policy areas are identified to achieve this:

- developing macro-economic capability
- investing in public assets and infrastructures
- increasing financial and fiscal prudence
- reforming macro-economic accounting

Protecting capabilities for flourishing

The social logic that locks people into materialistic consumerism is extremely powerful, but detrimental ecologically and psychologically. A lasting prosperity can only be achieved by freeing people from this damaging dynamic and providing creative opportunities for people to flourish – within the ecological limits of the planet. Five policy areas address this challenge:

- sharing the available work and improving the work-life balance
- tackling systemic inequality
- measuring capabilities and flourishing
- strengthening human and social capital
- reversing the culture of consumerism

Respecting ecological limits

The material profligacy of consumer society is depleting natural resources and placing unsustainable burdens on the planet’s ecosystems. There is an urgent need to establish clear resource and environmental limits on economic activity and develop policies to achieve them. Three policy suggestions contribute to that task:

- imposing clearly defined resource/emissions caps
- implementing fiscal reform for sustainability
- promoting technology transfer and international ecosystem protection

Source: Jackson (2009: 13)

5 Towards solutions: Policy areas and measures

In this chapter we summarize suggestions made in the work reviewed in the preceding section and complement it by insights gained from additional literature and our interviews. We cluster the suggested policies and measures in 10 areas: resources and environment, poverty and inequality, work, population, investment, trade, money and finance, consumption, fiscal reform/government expenditure, and new measures of progress.

5.1 Resources and Environment

➤ Limit resource use

Lower rates of economic growth would help to relieve the pressure on the environment in

terms of lower resource and energy uses and a decline in climate damaging emissions but will however not be a sufficient response to solving our environmental problems. Policies that maintain a throughput that is within the assimilative and regenerative capacities of the ecosystem are limits, taxes and trading.

Cap Auction Trade Systems for Resources are a good example of the independence and proper relationship among the *scale* of an economy, the *distribution* of wealth, and efficiency (*allocation*) with which resources are used (Daly and Farley, 2004). “Cap” refers to limiting bio-physical scale by quotas on depletion or pollution (depending on which one is more limiting), “auction” of the caps allows for rents for just redistribution; “trade” enables efficient allocation. The basic idea is that a regulatory agency (e.g. a government) sets a limit, based on the rate of depletion of the respective resource or resulting pollution that the economy can be allowed to impose on the ecosystem. Ideally, the quota should be applied at the input end as it is easier to monitor, more spatially concentrated, and the higher price will lead to a more economical use at each following stage of production. The government initially owns the quota and auctions them to enterprises, municipalities, individuals etc. whereby the revenues should ideally be used to reduce income tax. The market determines the price as the quotas can be freely bought and sold by third parties. The same logic can be applied to fish catch allowances, water use allowances, forests etc. For renewable sources, the quota should be set to an estimated sustainable yield. For non-renewables, the rate of advancement of renewable substitutes or sustainable rates of absorption of resulting pollution can act as a criterion (Daly, 2010). The scheme can even be applied to population control as in the tradable birth quotas suggested by Kenneth Boulding (Daly, 1992). It can be applied regionally, nationally, and internationally and has the advantage of transparency (Daly, 2010).

Environmental Taxes and Ecological Tax Reform represent alternative approaches where governments impose a price or tax on resource use or undesirable emissions and let the variety of actors determine the level of resource extraction and emissions. If extraction rates or emissions turn out to be too high, the price can be adjusted accordingly. Ecological Tax Reform internalizes external costs by shifting the tax base from things we want (labour and capital) to things we don't want (depletion and pollution). Proponents usually request revenue neutrality, viz. government revenues remain unaffected. In a modified form some revenues can be used for other purposes such as the support of new technologies. A risk under this option is that the amount of tax revenues could be quite different from the required rate of revenue. If revenue becomes a main target, the tax may be set at a low rate for fear of eroding the tax base. Hence, revenue neutrality is an attractive feature in order to meet the environmental policy objective the tax was designed for. Governments are therefore well advised to determine their revenues and expenditures separately (Victor, 2008).

5.2 Population

➤ *Stabilize population*

A growing population is not necessarily a precondition for economic growth but if the population increases, economic growth is vital if GDP per capita is not to decline. Fortunately, this is a trend rich countries are experiencing; unfortunately, this is not the direction in which the populations of most poor countries and in sum the global population are heading.

In the 1960s and 1970s the worldwide population control movement was very active, advocating for and driving many family planning and reproductive health programmes. In the 1980s already, opposition increased on the grounds that women's reproductive rights were part of their human rights, with considerable consequences on population control policies starting in the 1990s. Interestingly, the environmental movement began with a focus on population concerns (due to declining ecosystems, food production concerns, climate change, peak oil etc.) but has in the course of time given in to political correctness. Today, population stabilization is an anathema in most political circles.

Population policy is such a sensitive issue because it is not only a question of economic growth

but also of social justice, individual freedom, human rights (Victor, 2009) and religion. The Roman Catholic Church refuses abortion, sterilization, and contraception in general, but particularly as regards population control policies.

However, even if controversial and difficult, a balance in which births plus in-migrants equals deaths plus out-migrants eases the consequences of a low- or no-growing economy. Population control can involve measures such as

- making contraception available everywhere, improving people's lives by giving them greater control of their reproduction;
- supporting voluntary family planning;
- enforcing reasonable and democratically enacted immigration laws;
- introducing a one-child policy everywhere for a couple of generations.

In the conventional wisdom, immigration is needed for economic growth in rich countries where the population is declining. Especially in the case of assuming low economic growth rates in the future, much of the pro-natalist and open-borders rhetoric that seems motivated by generosity, loses ground as this “generosity” is, ultimately at the expense of the working class – a cheap labour policy (Daly, 2010). Austria can achieve the goal of stabilizing its population through an immigration policy that both meets humanitarian interests and contributes to prosperity and development.

5.3 Work

➤ *Share work*

From an economic point of view the issue of labour is mainly interesting from the perspective of employment, income, working hours and productivity. Labour also stands in the centre of a cultural whole which includes labour as (1) production of goods, (2) as source of income and purchasing power and (3) as service to the family, neighbours and the community. The future design of labour has to set following basic conditions:

- as many people as possible should be able to participate in the labour market;
- a better balance between those working too much and those being unemployed;

In a prolonged economic slowdown, rising unemployment is often seen as threat. Therefore, measures capable of facing this threat in an adequate way are necessary. In order to decelerate or avoid rising unemployment in spite of a lack of economic growth, there might be two possibilities: slowing down the increase of potential GDP (via lower productivity gains) or distribute the amount of work more equally (via less working hours per capita). The former is more difficult to influence politically, but still can be pushed by the support of a shift from production to maintenance and repair, which are more labour intensive (Daly, 2008) and a strengthening of other labour intensive sectors, such as education and care, through measures like a reduction of the number of students per class or of care patients per caregiver.

The second option of sharing work is (though subsidized through partial wage compensation by the state) used in several countries at the moment in order to absorb the effects of the crisis on the labour market (AG Alternative Wirtschaftspolitik, 2010). In a no or low growth economy, the instrument of work-sharing would have to be maintained after the crisis as a key instrument for employment politics, although without wage compensation. Working less while by the same token earning less is central, in order to create additional jobs.

In order to achieve an overall work-time reduction that results in positive employment effects, three factors are essential: a **reduction of the norm**, an increased **flexibility** for employees to choose their working time **and accompanying political measures**, which induce a cutback of barriers. As an example for a new “norm”, the new economics foundation (nef, 2010) proposes a 21 hours week¹ and defines nearly 30 concrete policy measures therefore, grouped in four cate-

¹which accords to the average that British people of working age spend in paid work and just a little more than the average spent in unpaid work.

gories: achieving shorter working hours; ensuring a fair living income; improving gender relations and the quality of family life; and changing norms and expectations. Work time could also be reduced step by step as productivity increases. In order to increase work-time flexibility, employees' possibilities concerning weekly work-time, family time, parental leave, sabbatical breaks and amount of leave days would have to be improved (Jackson, 2009). Several policy measures should accompany the process: ending the discrimination of part-time jobs, e.g. concerning job security and rate of pay (Jackson, 2009), an active training policy to avoid shortages of skilled labour and redistribution measures, because low wage employees simply can't afford to work less (Bosch, 2000).

In addition to the redistribution in gainful employment, another possibility is to redistribute between gainful employment and informal (or unpaid) forms of work. This way of reallocation ends up in the **concept of mixed work ("Mischarbeit")**. This concept was developed at the Wissenschaftszentrum Berlin. It pulls together gainful employment and other relevant forms of labour in an economy such as active work (i.e. housework), care work (i.e. child care, nursing for the sick and old) and work for the community (e.g. unpaid work for self-help groups, non-profit associations, informal organisations) for all population groups (Hans-Böckler-Stiftung 2000). These informal forms of labour are seen as necessary in existing economies without having a market value (Brandl, Hildebrandt, 2001). In the concept of mixed work these valuable activities are considered explicitly and with this, get a higher significance.

The concept of mixed work can be achieved in practice with more flexibility at work and cutting of working hours (see above). Besides the positive effects on labour productivity, reduced gainful employment hours result in an increase of active work and nursery work hours. Overload and work related diseases can be lessened and a better balance of work and family can be achieved. Unpaid work could be better distributed to women and men improving gender equality. Mixed work can also bring positive effects for relieving public finances: a stronger focus on nursery work can substitute professional nursery for example and this reduces burdens on the national budget (Stocker et al., 2006).

Data show that the Austrian population wishes to work less; even if this means to earn less (however the investigation included a 50 % wage compensation, proposing a reduction of work time by 20 % and of income by 10 %) (Mayrhofer and Zellmann, 2009). In practice, there are several institutional and social **obstacles for employees** to reduce their working hours, such as a reduced pension, career barriers, or more intense and stressful work. Another main complication is that people are locked in patterns of spending that are essential for everyone (such as housing) and such that are essential for social status and identity (such as a car) (nef, 2010). **Employers**, on the other side, do not have incentives for employing more staff, as each new employee causes higher costs under the current structure of the labour market and employment regulations (such as costs for personnel management, training and development and costs of national insurance).

5.4 Poverty and inequality

➤ *Limit inequality*

Without growth, increasing rates of poverty require redistribution policies. The current debate on poverty is increasingly associated with social exclusion. This concept puts an emphasis on the processes that push people to the edge of society, which limit their access to resources and opportunities, curtail their participation in normal social and cultural life, and bring high costs to society as a whole. Data on inequality is vital when thinking about poverty, because the overall allocation of resources affects the degree and depth of poverty. Poverty and inequality are much more than a lack of income but lacking income is definitely a key facet of both hardships (EAPN, 2010).

Even though economic theory is ambiguous, many economists argue that redistribution measures weaken growth by undermining incentives. This approach rests on a separation between income growth and income distribution. It is assumed that growth and redistribution happen

independently from each other, which implies that growth can be pursued by certain policies, while distribution is adjusted by a different set of redistributive policies. As a consequence, how distribution changes critically depends on the policies that are used to achieve growth. According to the new economics foundation the key question therefore is not whether growth affects distribution or vice versa but how distributional effects could be integrated into the design of economic policies as a whole (nef, 2006).

A number of economists doubt the doctrine that income gaps are good for increasing incentives. French economist Thomas Piketty, for instance, analysed the historical development of income inequalities and wealth in industrialised economies and found out that big financial crises can partly be explained by widening income gaps. A fast growing financial sector results in income gaps because it is rich people who profit from capital gains yields most. In order to avoid future financial bubbles and in sharp contrast to tax cut policies since the late 70s, Piketty suggests a **highly progressive income tax**. Extremely high salaries should be taxed accordingly, e.g. salaries above 1 Mio Euro could be subject to 80% income tax (affecting less than 0,5% of the population). Piketty draws inspiration from policies enacted by Franklin D. Roosevelt during the economic crisis in the 1930s. He enforced a 91 % income tax for incomes higher than 200.000 \$/a (equivalent to 2 Mio \$ today). Until 1980 this tax was on average 80,2 % - without suspending the American capitalism (Fricke, 2010).

For Herman Daly, the limits to the range of inequality could be determined by **a minimum and a maximum income**: *“The civil service, the military, and the university manage with a range of inequality that stays within a factor of 15 or 20. Corporate America has a range of 500 or more. Many industrial nations are below 25. Could we not limit the range to, say, 100, and see how it works?”* (Daly, 2010). His concept includes that people who reach the limit could either work for free at the margin or spend their extra time on public service or hobbies.

A sense of community based on democracy is hard to establish if vast income differences exist. Ultimately, the level of distribution is a normative question, dependent on different government policies.

5.5 Trade and Regional development - Global politics vs. localisation

➤ *Re-regulate international commerce / promote localization*

The trend of the last years concerning trade policy has been the reduction of trade barriers as well as barriers for international capital mobility. This policy is based on a broad consensus of economists about the gains of free trade (Coughlin, 2002). Daly (2010) adds that economic assumptions about the gains of free trade like Ricardo's comparative cost advantage theory act on a hypothesis of immobile production factors, which is no longer correct in times of international capital mobility (and increasing labour mobility).

In a no or low growth scenario, it might be necessary to **rethink the unrestricted free trade agenda** of the last decades. Instead, the environmental and social costs of production and transport would have to be considered, e.g. a global carbon price would make transport more expensive and would therefore probably reduce the overall trade volume to a more sustainable level (Giljum and Polzin, 2010). A similar effect could be triggered by a general application of “fair trade” standards to international trade, which would reduce social costs, but again would make the traded goods more expensive and would hence lead to a further reduction of the trade volume (Bayon 2010). But especially concerning the general application of fair trade standards, there is considerable doubt about the feasibility, e.g. because of the question how to define a “fair” price (Bayon 2010).

If the implementation of these measures is not successful internationally, countries could introduce comparable measures of cost internalization on their own. This could make a “new protectionism” necessary (Daly, 2010). This protectionism wouldn't protect inefficient industries, but sectors, that are affected by national policies of cost internalization because in cases, in which e.g. environmental costs are included in the price of products, free trade with countries that don't have such policies might not lead to welfare gains, but to standard-lowering competition.

The new tariffs which would be introduced in order to constrain this “race to the bottom” would at the same time be a good source of public revenue (Daly, 2010).

As the measures described are conflictive with current trade agreements and the focus of the relevant international organizations (WTO, IMF and World Bank), a **renegotiation of trade agreements** (Victor, 2009) as well as a **reform of the international institutions** (Daly, 2010) would be required.

Countries still going for export-led economic growth might put pressure on the no or low growth countries’ trade balance. Therefore, measures in order to reduce global imbalances might gain even more importance than today. That is, where Daly (2010) sees the future main task of WTO, IMF and WB. He suggests that they are to implement two measures that were already proposed by John Maynard Keynes at the conference of Bretton Woods. Firstly, they should introduce and charge penalty rates on surplus as well as deficit balances in order to create incentives for both kinds of countries to reduce international imbalances. Secondly, they should introduce a global clearing account unit which would replace national currencies as reserve currency.

As already mentioned, the described trade policies would very likely lead to a reduction of the trade volume. It would therefore foster regional economic cycle and contribute to localization.

There are several question concerning trade policies that should be additionally considered, including which biophysical indicators might be good for trade, what kind of governance systems will be needed and how questions of national food security can be included (Giljum and Polzin, 2010).

5.6 Consumption

➤ *Address the social logic of consumerism*

Consumption is the principal driver of economic growth. In a society that seeks to cope with low or no growth, consumption would need to be different. Levels of production would change and be lower, resulting in a reduction of material consumption in favour of immaterial goods and more conscious and responsible consumption.

Material goods are indispensable for basic needs such as food and housing and as such critical for people’s physiological flourishing (health, life expectancy). But consumer goods play a role that goes way beyond their material functionality. We use a powerful ‘language of goods’ to communicate with others about status, identify, social affiliation and even feelings. The symbolic role that consumer goods play in people’s lives also aims at social comparisons. ‘Keeping up with the Joneses’ pushes the demand for an enormous variety of material products. This logic leads, in turn, to a situation where we are exposed to hundreds of messages every day with the intention to lead us to consume. We live in a high consumption world today (Jackson, 2009).

This consumer society has evolved in part to protect consumption driven economic growth – with negative psychological and social side-effects. Kate Soper (2008) highlights that the culture of consumerism has passed a critical point where materialism is now actively detracting from human wellbeing. This view is supported by evidence from psychologist Tim Kasser (2002 and 2008). He shows that people with materialistic values and priorities (popularity, financial success, competition) report lower wellbeing than people with higher intrinsic values (self-esteem, connectedness to others, autonomy). These people are not only happier but healthier, socialize better and have smaller ecological footprints. Hence, the ‘high price of materialism’ comes with higher psychological, social and ecological costs. This evidence is astonishing as it shows that there is a double or triple dividend in a less materialistic life.

Low or no growth need not necessarily go hand in hand with less quality of life. A vast amount of literature has challenged the widespread belief that higher incomes and related higher levels of consumption make people happier and satisfied with their lives. Prosperity is not the same thing as material wealth. *„Rather, prosperity has to do with our ability to flourish: physically, psychologically and socially. Beyond sheer subsistence or survival, prosperity hangs on our ability to*

participate meaningfully in the life of society" (Jackson, 2009). The idea of a sustainable economy is to provide **capabilities for flourishing within ecological limits** (Jackson, 2009).

Required policy measures must both **support a change in social behaviours** and address the **structural incentives** towards materialistic consumption and unproductive status competition are essential. This requires communication and education about happiness, values, the ecology, and debt as well as stronger regulation in relation to the commercial media and stronger consumer protection on questions of product durability, sustainability and fair trade. Equally important are increased investments in public goods and social infrastructure and social innovation is vital in changing consumption with considerably less material input. The tax system could favour goods that are more durable, more useful and less harmful to the environment and people's health (Jackson, 2009; Victor, 2008). As people's happiness critically depends on their relative income a tax on income is proposed by Layard (2006).

Policies that drive changes in the social structure can and do shift people's values and behaviours. This is absolutely essential as policy changes must not only be driven top-down but wanted and accepted by the public. Citizens can and have to take action to effect change. Households and communities are vital for both highlighting the limits of voluntarism and for pointing to the possibilities for flourishing within ecological limits (Jackson, 2009).

Tim Jackson (2009: 86) summarises to the point: "Fixing the economy is only part of the problem. Addressing the social logic of consumerism is also vital. This task is far from simple – mainly because of the way in which material goods are so deeply implicated in the fabric of our lives."

5.7 Money and Finance

➤ *Reform the monetary system*

There is no extensive literature on the question to what extent and how the monetary and financial system would have to change in a low or no growth economy. Academics dealing with this issue seem to share a major point of critique: that our current system of **debt-based money creation** is unstable.

The basic idea of today's fractional reserve banking is that banks create money by extending loans. In other words, almost all² the money used in the economy exists because someone has borrowed it and is paying interest on it. As money creation requires loans from the banking system, some people are required to go into debt. The level of debt will steadily increase if the lending institutions are profitable. Critics frequently find it problematic that banks "create money out of nothing". In a contracting economy, the burden placed on a country by its debts gets heavier and heavier (Scott Cato, 2009) and less money will be needed in circulation to lubricate the reducing level of transactions. The problem is that new loans will still need to be taken out but will people be prepared to borrow – and lenders to lend – in a contracting economy? (Douthwaite, 2010).

There is a possibility that this debt-based money system will break down when an economy shrinks. Therefore, a key question is how a more resilient money system can be built.

Daly (2010) suggests moving away from Fractional Reserve Banking toward a **system of 100% reserve requirements**. This would inhibit the creation of money by private banks and put the control of the money supply and seigniorage in the government's hands. Daly advocates bringing all quasi-bank financial institutions under this rule. 100% reserve requirements would imply that every Euro loaned to a borrower was a Euro before saved by a depositor. Banks would receive revenues by financial intermediation only and the government could pay its expenses by issuing non-interest-bearing fiat money (to substitute the eliminated interest-bearing money created by banks). Issuing new money would however only be possible up to a strict limit imposed by inflation. As soon as the price index begins to rise, the government must print less and

² Notes and coins are the only non-debt-based non-interest bearing part of our money stock but cash comprises only about 3% of the money used in the US and about the same proportion in other countries (Douthwaite, 2010).

tax more. Daly proposes a policy of maintaining a constant price index to govern the internal value of the currency and freely fluctuating exchange rates to govern its external value.

In the same spirit, Robertson and Huber (2000) argue in their book “Creating New Money” that the ability to create money should be taken away from the banks, limiting their activities to acting as intermediaries between lenders and savers. New money required to enable trade could be created by the government, which would spend it into use. The government’s role would be to ensure that the money stock was appropriate for the amount of trading going on. There are certain worries that a government would spend too much money into use (particularly just before an election) but this could be prevented by setting up an Independent Monetary Commission which would decide how much money the state should inject, or extract, from the system.

The Robertson/Huber approach introduces **existing money in a new way** and works at national or super-national level. In contrast, a proposal put forward by Feasta, an Irish-based foundation for the Economics of Sustainability, is designed to operate at a sub-national level. Feasta is currently working to establish a debt-free exchange system which should be introduced to overcome the problems created by the failure of the present debt-based system. The new money – called “quid” – would be given by the community trust running the system to all the users, not just to the government. Users would be allocated their share of each new injection of quid in proportion to the impetus they had given to the development of the system since the last injection (Douthwaite, 2010).

In both proposals the injected money could be extracted if required and the new money would be given by a regulatory trust for spending into use. In one, however, it would all be given to the government. In the other, all users, including the state, would get a share (Douthwaite, 2010).

For now, a major focus in the theory and practice of alternative money and financial systems is on creating **alternative currencies**, both as a means to stimulate local economic activity and as a supplement in the event of the failure of the unstable global monetary system (Scott Cato, 2009).

5.8 Investment

➤ *Change investment patterns*

For managing a low-growth economy, different patterns of investment are required that reflect the changing living situation of people (e.g. more public goods and fewer private, status goods) and different public policies. For instance, if we adopt a cap auction trade scheme for resources as described above, there will be an impact on investment through price effects. While investments in assets that use large amounts of resources will become unattractive, investments in assets that preserve throughput will become more attractive (Victor, 2008).

If we look at the range of current challenges it can be assessed that, at a basic level, many of them share a common characteristic: the misallocation of capital. In the last two decades, much capital has been invested into property, fossil fuels, and structured financial assets with embedded derivatives, but comparably little has been placed in energy efficiency, renewable energy, public transport or sustainable agriculture (UNEP, 2009). A failure to change this investment track could lead to social problems of job losses, socio-economic insecurity and poverty.

In today’s times of crisis the case for a stimulus focused on energy and carbon is very strong. A “Green New Deal” or “Green Growth” is suggested to reconcile economic recovery with reducing resource dependency and protecting ecosystems in order to restore stability. There is extensive consensus that major investments are needed over the next decades and targeting that investment towards low-carbon infrastructures, energy security and environmental protection presents several benefits.

For instance, in a study published in the end of 2008, Deutsche Bank identified a ‘green sweet spot’ for stimulus spending, consisting of investment in energy efficient buildings, the electricity grid, renewable energy and public transportation. The bank claimed that the “green sweet spot” is an attractive focus for an economic stimulus because of its labour intensity (Deutsche Bank,

2008). A report by the University of Massachusetts Political Economy Research Institute supports that view. Six priority areas for investment were identified: buildings, mass transit/freight rail, smart grid, wind power, solar power and next generation biofuels. The study indicates that spending US\$100 billion on these sectors over two years would create 2 million new jobs (Jackson, 2009). UNEP's Global Green New Deal also includes investment in natural infrastructure, including sustainable agriculture and ecosystem protection. As ecosystems provide tens of trillions of dollars worth of services to the world economy, protecting and enhancing them is vital to economic productivity in the future (UNEP, 2009).

In short, some green stimulus makes perfect sense for protecting people's jobs and shifting towards a low carbon economy. Massive investment is required to achieve sustainability. According to Jackson (2009) investment in jobs, assets and infrastructures emerges as a key component. Targets for this include: public sector jobs in building and maintaining public assets; investments in renewable energy, public transport infrastructure, and public spaces; retrofitting the existing building stock with energy- and carbon-saving measures; investing in ecosystem maintenance and protection; and providing fiscal support and training for green businesses, clean technologies and resource efficiency (Jackson, 2009). Victor (2008) adds that we will have to tailor the tax system so that investments in beneficial and less harmful technologies are preferred.

Nevertheless, even the 'greenest' Keynesian stimulus aims at returning to continuing consumption growth. As this situation is not sustainable, something more is needed for the long term. A different way of ensuring stability and a different kind of economic structure is essential (Jackson, 2009).

5.9 Fiscal reform / government expenditure

➤ Reform the fiscal system

The tax system is a central issue as regards the handling of a persistent low growth path. Especially decreasing consumption tax revenues as a result of falling consumption levels would cause budgetary problems and make reforms necessary.

On the national level, taxes (as well as subsidies) play an important role for political as well as economic, social and ecological governance. Besides its financing function, it contributes to several targets (Aiginger et al., 2008): raising employment and competitiveness; increasing resource and energy efficiency and decreasing emissions; limiting unequal distribution of incomes and assets; strengthening the work-life balance; and avoiding future public spending. Therefore, fiscal reform is interlinked with several policy areas already discussed in this paper.

Also in a situation of high economic growth there is need for reform of the Austrian fiscal system: In general, the Austrian system is relatively poor in promoting growth and employment. At the same time ecological and distributional aspects loose importance. Effective tax rates on labour are fairly high in the European comparison (36,5 % Euro zone, 38,7 % EU-25) and in Austria even rising and with 41% above the European average. The effective taxation of energy use is, in contrast, declining throughout the last years and considerably below the European average – in Austria the price per ton oil equivalent is 144,5 € (172,2 € Euro zone, 177,2 € EU-25).

In a situation of low economic growth the necessity for reforming the tax system would even be more urgent. First it would be necessary to define goals and targets for a reformed tax system. Important levers could be an ecological tax reform; high consumption taxes on energy and resource use and on harmful activities (such as tobacco and alcohol); financial transaction taxes; higher property taxes and taxes on profits; a pension reform, a federalism reform etc.

According to one interviewee necessary reforms should be designed as a combination of top-down and bottom-up approaches. The government's responsibility would be to establish a general programme that shows which services can still be provided by the State and which no longer. The role of local communities, boroughs, and local institutions such as associations, the church etc. would be to set activities in their sphere of influence, a lot of them in the form of

volunteer work.

5.10 National accounts and new measures of progress

➤ *Reform national accounts and develop alternative indicators*

The most commonly used indicator for measuring economic performance is GDP. Although it was not designed to be a measure of well-being, the interpretation of GDP shifted over the years from a basic measure of a country's market economy output towards a key indicator for measuring how well societies are doing in general. This was partly justified as key factors for quality of life grew with GDP, such as housing, food, employment, health care, education and security.

If we assume a persistent low growth in industrialised countries the question arises what to put instead of GDP as a headline indicator in order to better measure prosperity and societal progress, following the dictum: what you can't measure, you can't manage.

A lot of work in this direction is already under way due to a growing agreement among academia, the civil society, business, and the political sphere that economic output and its growth, as measured in GDP, do no longer necessarily mean an improvement in our quality of life for the majority of people and that overemphasizing GDP-growth as a policy objective may jeopardize our socio-economic and sustainable development. More than 40 years ago, Sen. Robert F. Kennedy already highlighted: *"GNP measures neither our wit nor our courage, neither our wisdom nor our learning, neither our compassion nor our devotion to our country. It measures everything, in short, except that which makes life worthwhile"* (speech given on March 18, 1968).

Reflecting global challenges, we can observe increased political interest in the extension of official statistics with formerly neglected areas, for instance related to sustainable development. The aim is to establish clear and appealing indicators that complement GDP and that are more inclusive of other dimensions of progress – in particular environmental and social aspects. There are many initiatives under way, but especially three stick out when it comes to measuring progress in a more multifaceted way so that those issues that matter for quality of life most are made visible and measurable.

First, the OECD initiated an ambitious global project on "Measuring the Progress of Societies" in 2004 "to foster the development of sets of key economic, social and environmental indicators to provide a comprehensive picture of how the well-being of a society is evolving. The project also seeks to encourage the use of indicator sets to inform and promote evidence-based decision-making, within and across the public, private and citizen sectors" (OECD, 2009).

Second, the European Commission initiated the "Beyond GDP" process that led in 2009 to the adoption of a policy paper that outlines a road-map for action to 'go beyond GDP' with five key actions to improve our indicators of progress in ways that provide an improved basis for public discussion and policy-making (EC, 2009):

- complementing GDP with environmental and social indicators;
- near real-time information for decision-making;
- more accurate reporting on distribution and inequalities;
- developing a European Sustainable Development Scoreboard;
- extending National Accounts to environmental and social issues.

Third, French President Nicolas Sarkozy asked Nobel laureate Joseph Stiglitz in 2008 to lead a group drawing up new measurements of economic performance on social progress. The Commission's final report was published in September 2009 (Stiglitz, 2009) and is structured along the issues of three working groups: Chapter 1 focuses on Classical GDP issues, responding to the importance to improve existing measures of economic performance before going beyond GDP and approaching the more difficult task of measuring well-being. Chapter 2 on Quality of Life emphasises the importance to complement measures of market activity by measures of people's wellbeing. Chapter 3 on Sustainable Development and Environment follows the logic of a "wealth" or "stock-based" approach to capture sustainability. The report provides a general overview of the state-of-the art in the respective areas and comes up with 12 key recommenda-

tions for areas where more emphasis should be put on, such as giving more prominence to the distribution of income, consumption and wealth; working with a set of physical indicators to measure the environmental aspects of sustainability, or designing surveys to assess the links between various quality-of-life domains for each person.

6 Summary and next steps

This paper represents the first step of the research project 'Implications of a persistent low growth path. A scenario analysis'. The literature review analyses the status quo of the existing work and theoretical arguments for handling a possible low growth path. These findings demonstrate important inputs for the next task in the research project that is the development of scenarios. In addition to a baseline scenario, we are developing two scenarios that aim to analyze a persistent low growth path by assuming an average growth rate of 0,5 %. This growth rate will have to be achieved by the assumptions made in the scenarios. The scenarios are currently discussed and refined with the clients of this project. The reference scenario as well as both alternative scenarios will then be modelled with the integrated environment-energy-economy-model e3.at (see Grossmann et al. 2007), which enables a quantitative description and analysis. In the last step the modelling results will be evaluated and reprocessed. Based on this analysis proposals for adequate policy measures will be presented. The overall conclusions will be summarised in a final report and presented to the clients and selected experts in a closing event by the end of 2010.

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Annex 1: List of interviewed persons

Peter A. Victor Ph.D.: York University, Toronto, Ontario, Canada, Faculty of Environmental Studies. Personal interview, 28 March 2010.

Prof. Dr. Dr.h.c.mult. **Friedrich Schneider**: Johannes Kepler University of Linz, Department of Economics. Telephone interview, 30 March 2010.

em.Prof.Dr.**Karl Socher**: University of Innsbruck, Department of Economic theory, Economic policy and Economic history. Telephone interview, 30 March 2010.

Ao. Univ.Prof. Mag. Dr. **Christian Dirninger**: University Salzburg, Department History – Economic and Social History. Telephone interview, 7 April 2010.

Dipl.-Vw.Dr. **Reinhard Mechler**: Vienna University of Economics and Business, Institute for the Environment and Regional Development. Telephone interview, 8 April 2010.

Daniel O'Neill: University of Leeds, Faculty of Environment and CASSE (Center for the Advancement of the Steady State Economy). Telephone interview, 12 April 2010.

Armon Rezai: Vienna University of Economics and Business, Institute for the Environment and Regional Development. Telephone interview, 22 April 2010.

Questionnaire

Three broad and rather narrative guiding questions were posed in order to allow for an open discussion:

- Assuming a persistent low growth path in the future which consequences can be expected (in economic, social and ecological terms)?
- How can we deal with the negative consequences of low growth? Which political measures/policies that can be used to counteract negative consequences?
 - Can you think of historical examples of a persistent low growth path and how the situation has been dealt with?
- Which reasons could lead to a contraction of the economy?