

CICERO Policy Note 2011:01

**WEALTH, WELFARE AND
SUSTAINABLE GROWTH AND
DEVELOPMENT :**
Challenges of Economic- and Fiscal Policies in
Resource-Producing Countries

Thorvald Moe, Ph.D.

March 2011

CICERO

Center for International Climate
and Environmental Research
P.O. Box 1129 Blindern
N-0318 Oslo, Norway
Phone: +47 22 85 87 50
Fax: +47 22 85 87 51
E-mail: admin@cicero.uio.no
Web: www.cicero.uio.no

CICERO Senter for klimaforskning

P.B. 1129 Blindern, 0318 Oslo
Telefon: 22 85 87 50
Faks: 22 85 87 51
E-post: admin@cicero.uio.no
Nett: www.cicero.uio.no

Title: WEALTH, WELFARE AND SUSTAINABLE GROWTH AND DEVELOPMENT: Challenges of Economic- and Fiscal Policies in Resource-Producing Countries.

Author(s): Thorvald Moe
CICERO
15 pages

Financed by:

Project:

Project manager:

Quality manager: Knut H. Alfsen

Keywords: Sustainable Economic- and Fiscal Policies in Resource- Producing Countries

Abstract: This Policy Note discusses, based on modern development theory and wealth accounting, challenges for economic- and fiscal policies in resource-producing countries defined as countries - both developed and developing low income countries - which rely heavily on non-renewable or exhaustible natural wealth

Language of report: English

Rapporten kan bestilles fra:
CICERO Senter for klimaforskning
P.B. 1129 Blindern
0318 Oslo

The report may be ordered from:
CICERO (Center for International Climate and vironmental
Research – Oslo)
PO Box 1129 Blindern
0318 Oslo, NORWAY

Eller lastes ned fra:
<http://www.cicero.uio.no>

Or be downloaded from:
<http://www.cicero.uio.no>

Contents

1 Introduction 1

2 Wealth, Social Welfare and Development 1

3 The Resource Curse..... 3

4 Sustainable Economic – and Fiscal Policies in Resource-Producing Countries 4

5 Wealth and Economic - and Fiscal Policies in a Developed Resource-Producing Country:
The Case of Norway..... 5

6 Economic- and Fiscal Policies in a Low Income Resource-Producing Country:
The Case of East Timor 8

7 Conclusions 9

ANNEX 1. Measuring Wealth and Sustainability. Assessing the Sustainability of Economic
Performance in Resource-Producing Countries. 11

ANNEX 2. What may Developing Countries Rich on Natural Resources learn from
Norwegians Experiences? 13

References 15

Executive Summary

For Resource-Producing countries, defined as countries that rely heavily on production and revenues from non-renewable or exhaustible natural resources such as oil and gas, there are two main challenges for economic management:

- How should economic- and fiscal policies be designed and executed efficiently to sustain growth and development in the face of exhaustibility?
- How should Ministries of Planning – and Finance in these countries measure economic performance?

These two challenges are discussed in this Policy Paper, and it is argued that resource -producing countries – RPCs - should as far as possible:

- Establish a solid national tax regime to extract the natural resource rent for the domestic population. This requires building up national institutions and technical expertise, notably in Ministries of Planning – Economy and Finance, to match foreign companies;
- Establish a Fiscal Guideline (Rule) for the domestic use of the revenues from non-renewable resources which are exhaustible, so that the resource revenues are largely used to enhance real- and human capital, and thus the capital base to build the country. In other words, transfer the non-renewable natural wealth into other types of income generating wealth for growth and future development. In this connection, a number of experiences in RPCs have been that the capacity to invest in infrastructure etc. is often significantly overestimated so that a number of projects with good intentions are not realized or even wasted;
- Establish a Savings Instrument for this wealth transfer. In Norway this saving mechanism is a permanent Fund, a sovereign wealth fund (SWF) The Governments Pension Fund – Global, a wholly owned government buffer and savings fund which is the political responsibility of The Ministry of Finance. A number of various types of Natural Resource Funds exist, and a «Norwegian» type Fund was established in 2005 in a Low Income Resource Producing Country (LIRPC) - Timor-Leste. The experiences of Norway and Timor-Leste are discussed in sections V and VI of this paper;
- Use as far as possible wealth accounting in developed RPCs, and in developing RPCs simple sustainability indicators such as Adjusted Net Savings (ANS) recommended by The World Bank to assess economic performance ,correcting for the fact that GDP measures according to present national accounting conventions (SNA 93) does not deduct the depletion of natural resources. A RPC could thus draw down its non-renewable natural resources, boosting GDP in the short run, and depending on how the revenues are spent end up as poorer with a lower national wealth per capita – an example of the so called «resource curse» or «Dutch disease» referring to the policy failures of The Netherlands in the 1970s.

It is concluded that establishing clear guidelines for sustainable fiscal policies and transparent saving instruments, adjusted to the level of development and national circumstances in the resource-producing country in case, is *i sine qua non* for longer term growth and sustainable development in all RPCs – whether developed or LIRPCs. There are many historical and present examples in developed and developing countries of policy failures where simple rules for sustainable economic- and fiscal policies did not exist or were not followed, leading to lack of transfer of natural wealth into other types of wealth – and thus bursts of growth of GDP which was not sustained. However, there are also examples of how the opportunities presented by an ample endowment of non-renewable natural resources may be exploited to build countries gradually and sustainably.

Some basic rules for sustainable economic- and fiscal policies in RPCs are summed up in section 7.

Acknowledgements

I received useful comments to the paper from Knut H. Alfsen, Simen Bjørnerud, Thomas Ekeli, Kirk Hamilton, Torfinn Harding and Vidar Ovesen, and excellent secretarial assistance from Tone Veiby and Paolo Zupin.

1 Introduction

The purpose of this policy paper is two fold:

- Ask what resource producing developing countries, notably Low Income Resource Producing Countries – the LIRPCs – may learn from 40 years of experience of economic- and fiscal policies in a developed resource producing country – Norway;
- Review simple and basic rules for economic- and fiscal policies relevant for all resource producing countries, RPCs, – that is countries rich on non-renewable natural capital like oil and gas – in order for such countries to transform such exhaustible resources into other types of income generating wealth for growth and sustainable development.

In section 2 basic modern development theory is briefly set forth in non-technical terms as a background for the rest of the paper. Section 3 goes into the challenges for policies of the so called resource curse which potentially face all countries with large stocks of non-renewable resources. Section 6 reviews briefly necessary conditions for sustainable fiscal policies in RPCs, and sections 5 and 6 analyze how a developed RPC – Norway – and a LIPRPC – Timor leste – have applied these policy principles in actual practice, including establishing permanent Natural Resource Funds.

Section 7 concludes on principles for sustainable economic- and fiscal policies in RPCs, and Annex 1 discusses indicators for assessing the sustainability of economic progress in such countries. Annex 2 elaborates on what developing RPCs may learn from 40 years of Norwegian experiences.

2 Wealth, Social Welfare and Development

Development is, at heart, a process of building wealth – the produced, natural, human and institutional capital which is the source of income and well-being.

I start with the assumption that total wealth equals a measure of intertemporal wellbeing or social welfare W , the present value of future consumption. For an elaboration of why this may be so, see Hamilton and Hartwick: »Investing Exhaustible Resource Rents and the Path of Consumption«, Canadian Journal of Economics, May 2005.

More than 50 years have passed since Robert Solow wrote his seminal article. «A Contribution to the Theory of Growth» (1956) Quarterly Journal of Economics 70:65-94. Since then four major development or growth paradigms have emerged in the economic literature:

- Neoclassical;
- AK;
- Product-Variety; and
- Schumpeterian.

See Aghion and Howitt: «The Economics of Growth» (2009), and Jones: »Introduction to Economic Growth» (1998).

As documented in these books, a large economic literature has evolved since Solow presented his neoclassical growth equation in which development depended on (homogeneous) labour, traditional real or produced capital and (exogenous) technological change:

- Becker and Schultz developed the concept of human capital in the 1960s embodying investments in education and training;
- Natural capital was included as result of economic research starting after the first «oil price shock» in the 1970s when economists started to ask whether growth processes could be sustained in the face of exhaustible resources, see Hartwick (1977);
- And Romer (1990) introduced technological advances as an important endogenous driving force of development some twenty years ago.

Since then reasearch has also been carried out regarding the importance of governance systems and the functioning of institutions for development, see e.g. Chapter 11 of Aghion and Howitt op.cit. Practical policy experiences indicate that this is an important factor for wether development can take off successfully or not. Below I call this institutional capital, IC.

A synonym for this analytical or model based approach to understanding and explaining development is «the capital approach». This is simply a catchword for a model of development which in general and non-technical terms can be summed up:

$W = f(FC, RC, HC, NC, IC, TC)$, where:

W = welfare,

FC = financial capital,

RC = real capital,

HC = human capital,

NC = natural capital,

IC = institutional capital,

TC = the stock of technolodgical knowledge.

For Resource-Producing Countries, called RPCs in the rest of this paper, economic policies need to facilitate the transfers of exhaustible NC into other types of income generating capital or wealth like RC, HC and IC.

Natural capital, NC, may be divided into a market based part, MNC, such as petroleum – a non-renewable natural resource - , fisheries etc, and a non-market part, NMNC, such as the functioning of ecosystems, biodiversity etc which may be quite important for e.g. agricultural developments in developing countries.

We may now define Economic Wealth, EW, as $FC + RC + HC + MNC$.

Non-Economic Wealth, NEW, can in turn be defined as $NMNC + IC$, and

National Wealth, NW, as $EW + NEW + TC$.

In Annex 1 to this paper I will use this framework to show how comprehensive wealth accounting methods are used to measure the stocks of EW, and how this is used to assess whether development is sustainable in the longer term which boils down to judging whether real capital or wealth in real terms per capita is perserved for future generations. For developing countries simpler forms of wealth accounting or flow measures like Adjusted Net Savings (ANS) are proposed. See The World Bank: «The Changing Wealth of Nations. Measuring Sustainable Development in the New Millennium» (2011) – containing updated ANS-measures for a large number of countries. Such indicators of sustainability should be used by Ministries of Planning- and Finance to assess economic performance in addition to traditional measures like Gross Domestic Product (GDP) which by itself gives little indication of the longer term sustainability of development in RPCs.

3 The Resource Curse.

To reiterate: Resource Producing Countries (RPCs) are defined as countries with relatively large stocks of non-renewable natural resources like oil and gas etc. Income from extracting and selling such resources derive from depleting an exhaustible asset and can, in some occasions, be generated without the scrutiny of tax payers, donors, and lenders. Such resource revenues thus pose important intergenerational, political economy and governance challenges.

Another challenge for RPCs, as already alluded to, is that – according to present national accounting conventions (SNA 93) – measured Gross Domestic Product (GDP) does not deduct the use of inputs of non-renewable resources. Thus rapid extraction of such resources would boost measured GDP and present economic well being. But if the non-renewable natural resource base is rapidly depleted and not transformed into other types of income generating wealth, growth in GDP will not be sustained, and such a country could be worse off when the temporary incomes peter out or is significantly reduced.

According to Daban and Helis: «A Public Financial Management Framework for Resource-Producing Countries», IMF Working Paper WP/10/72, RPCs are quite diverse:

- A first group comprises developed RPCs characterized by low resource dependence, high GDP per capita, and strong linkages between the resource sector and the rest of the economy;
- Middle Eastern RPCs which are mostly specialized in oil production. Oil contributes about one-third of total GDP and three-fourths of annual government revenues;
- A third group of countries comprises emerging RPCs from Latin-America, Asia and Eastern Europe. These countries are characterized by high resource dependence, unequal distribution of income, and elusive social cohesion;
- The fourth group is Low Income Resource Producing Countries – The LIRPC group – including large and small African oil producers (like Sudan), and small oil producers from Asia (like East Timor). Prevailing conditions are a rural economy, sometimes in extreme poverty, high resource dependence, and an absence of both an efficient bureaucracy and basic infrastructure.

For all of these four groups of RPCs the overarching challenge for policy is how to avoid the resource curse, a complex phenomenon in which, through several economic, institutional and political economy transmission mechanisms, abundance of non-renewable natural resources may translate into stagnation, waste, and conflict.

One such transmission mechanism is the «Dutch disease» - coined after the policy failures in The Netherlands in the 1970s. That is, the set of negative macroeconomic effects caused by a large increase in resource-funded spending. If mainly allocated to domestically produced goods, a large increase in spending can push up domestic prices, the nominal exchange rate, and eventually appreciate the real exchange rate. The results are shifts of capital and labour into nontraded goods sectors and an erosion of the competitiveness of the nonresource economy. In the case of The Netherlands in the 1970s, large increases in social spending – e.g. on «non-working benefits» like disability- and sickness payments – also led to reduced incentives to work and thus the supply of labour and employment.

According to Daban and Helis, more recent examples of policy failures leading to Dutch disease are Equatorial Guinea and Nigeria, *op.cit.*, page 8.

Other transmission mechanisms that may lead to policy failures and an ultimate resource curse are:

- The extreme volatility of resource revenues;

- Depleting a non-renewable, non-financial asset means that resource revenues are exhaustible and temporary;
- Excessive reliance of resource revenues could transform RPCs into rentier states.
- These countries thus face two major challenges for economic management:
- How to design and manage economic- and fiscal policies to sustain growth and development in the face of exhaustibility?
- How should we measure economic performance?

The first question is further discussed in sections 4, 5 and 6 below, and the second in Annex 1.

4 Sustainable Economic – and Fiscal Policies in Resource-Producing Countries

As already mentioned, in the 1970s the economic profession turned its attention to sustainability: if essential non-renewable or exhaustible resources are finite, can economic output be sustained indefinitely? Hartwick in his justly famous article: «Intergenerational Equity and the Investing of Rents from Exhaustible Resources» (1977) showed that a simple policy rule for sustainability is to invest the resource rents in developing other (income generating) assets. This so called «Hartwick Rule» accords with common sense: Keep your income generating capital stock intact. But for reasons elaborated on in section 3 above, this has been and remains a major policy challenge for RPCs.

While maintaining real wealth at the economy-wide level is a key objective for general economic policies, the same principles can be applied to achieve fiscal sustainability which should, according to Hamilton and Ley, be defined to be the maintenance of real government wealth when part of the endowment consists of stocks of non-renewable resources owned by the public sector. See Hamilton and Ley. «Sustainable Fiscal Policy for Mineral-Based Economies», (2011).

For governments to achieve and manage fiscal sustainability, a number of distinct elements of the fiscal system need to work efficiently and effectively, including:

- Effective rent capture by governments;
- Fiscal rules or guidelines to limit discretionary use of resource revenues;
- A savings instrument regarding resource revenues, for example a Natural Resource Fund;
- Effective public investment and financial management.

Some present examples of Saving Rules or Fiscal Guidelines are:

- Botswana`s Sustainable Budget Index (SBI). It is calculated as Recurrent Expenditure (RE) divided by resource revenue (RR), i.e. RE/RR. Recurrent expenditure excludes spending on health and education, since these are defined as development expenditures, while recurrent revenue excludes revenues from the mining sector. See Hamilton and Ley, op.cit., page 8;
- Timor-Leste`s Estimated Sustainable Income for a Fiscal Year (ESI) which is the maximum amount that can be appropriated from the Petroleum Fund in that Fiscal Year and leave sufficient resources in the Petroleum Fund for an amount of the equal real value to be appropriated in all later Fiscal Years. See Timor-Leste Ministry of

Planning – and Finance: «Establishing a Petroleum Fund for Timor-Leste». Public Discussion Paper, Schedule I, page 20, 2004.;

- Norway: Use only the expected future rate of return of the accumulated financial wealth in The Norwegian Pension Fund – Global, presently estimated at 4 per cent, in each years Fiscal Budget to cover the non-petroleum deficit.

There are now a large number of different types of Natural Resource Funds, see Hamilton and Ley pages 16 and 17. But whether or not RPCs, developed or low income, want to establish such saving instruments, certain basic Public Investment and Financial Management features should be established in all LIRPCs:

- A transparent and comprehensive presentation of resource revenues in the budget – emphasizing the role of the non-resource deficit;
- A set of sound long-term projections as part of a realistic medium-term fiscal framework – including a set of well-defined budget classification;
- A system of flexible and transparent transfers from a separate Treasury Account – e.g. in the Central Bank – to finance the non-resource deficit;
- Developing a unified budget process, avoiding earmarking mechanisms.

And last but not least: In judging how much of the resource revenues to be used in each year's Fiscal Budget in order to build the RPCs sustainably:

- Spend on building up other types of income generating capital or wealth, real or human (including health);
- But do not overestimate the domestic capacity to build up such other types of wealth so as to avoid Dutch disease,
- Think through the intergenerational challenges of saving non-renewable wealth for future generations according to basic principles of making current growth and development sustainable over the medium – and longer term.

5 Wealth and Economic - and Fiscal Policies in a Developed Resource-Producing Country: The Case of Norway

Ever since the 1970s when petroleum wealth emerged as an important factor in the Norwegian economy and an important element in economic policy, restraining current use of rapidly increasing but ultimately exhaustible revenues from petroleum activities in Norway has been the key policy issue and a constant challenge for The Norwegian Ministry of Finance - in charge of both economic- and fiscal policies.

The first task was to develop and establish a modern tax regime based on the notion of economic rent, and that this rent belonged to the Norwegian people – and not to foreign oil companies.

The petroleum taxes (proper) consist of:

- The corporate income tax (rate 28 per cent), and The special (petroleum) tax (rate 50 per cent);
- Both taxes are levied pursuant to The petroleum Tax Act of June 1975 (PTA), providing certain special rules deviating from The general Tax Act. Annual decisions by The Storting (Parliament) fix the tax rates.

In addition «Government take» may be seen to include the following policy instruments which are not petroleum taxes in a stricter sense.

- The State Direct Financial Interest (direct state participation in licenses held and managed by Petoro, a limited company owned by the Norwegian state);
- The CO₂-tax aimed at reducing emissions of carbon dioxide on continental shelf installations, levied indirectly as a tax on natural gas and petroleum fuels emitted or burnt on the facilities (rate 0.47 NOK per scm/liter.) The tax is deductible cost in the base of the above mentioned corporate and special taxes;
- The area fee, a fee payable in accordance with the Petroleum Act, serving as an instrument to enhance desired utilization of licensed acreage.

From the outset, one was concerned with curbing the exploration rate (supply) of Norwegian petroleum and spending the revenues sustainably in a longer term perspective.

In the 1970s one adopted targets or ceilings for extraction and production in order to limit supply. However, this did not work very well as these politically adopted supply ceilings proved very difficult to achieve in practice as the oil companies pushed hard to increase exploration and production. Thus the second line of defense became to limit government current spending of petroleum revenues, looking for mechanisms to invest these revenues from the drawing down of non-renewable natural capital into other forms of wealth or capital – thus saving as much as politically possible for future generations of Norwegians.

Restraining expenditures and saving an appropriate part of our marketbased and non-renewable natural capital for future generations has been a very large challenge for economic- and fiscal policies, and it continues to be so. In 1990, during our worst economic crisis since World War II, a Petroleum Fund was established into which all income – tax income and income from Norwegian stock owned petroleum companies – is channelled. The first year of net income in the Fund was 1996. At the end of 2010 the financial capital stock of the Fund is estimated at some 500 billion USD, and according to The Revised National Budget 2010 the stock may increase to some 990 billion USD by 2020 – a Large Sovereign Wealth Fund for a small country of some 4.7 million people.

The basic principles of this «Norwegian» model of saving resource revenues and sustainable fiscal policies are:

- Integration with The Central Governments Fiscal Budget;
- The petroleum rent accumulated as financial wealth is saved for use by future generations of Norwegians, cfr. The Hartwick Rule, and invested in financial- and real wealth abroad;
- Transparency so that the governments key policy instrument – The Fiscal Budget – is not undermined, so that the risk of «Dutch disease» is reduced, and so that the strategy of managing the exhaustable natural wealth sustainably gets broad political and popular support.

In 2001 the Norwegian government in White Paper no. 29 (2000-2001) proposed a Fiscal Guideline for the use of the permanent income which may be called a «bird in hand» guideline: Use only realized resource revenues rather than potential total revenues where also where also physical petroleum reserves in the ground are included. This guideline for fiscal policies, which a majority of the Parliament (all parties but one) adopted shortly afterward implies:

- Income from petroleum activities is phased gradually into the domestic economy, approximately in step with the expected real rate of return of the present stock of

financial wealth of the Fund (The official name of the Fund since 2006 has been The Governments Pension Fund – Global);

- One wants to smooth fluctuations in the economy in order to achieve high capacity utilization and high employment.

This basic savings rule, the Fiscal Guideline, aims to achieve the following:

- The yearly Government Fiscal Budgets are cushioned from fluctuations in petroleum prices. All revenues from petroleum activities are placed in its entirety in the Fund. The expected real rate of return – estimated at some four per cent per year of the capital base of the Fund at the start of the fiscal year – may be used domestically, i.e. in that years Central Government Fiscal Budget. Thus short term fluctuations in petroleum revenues have a limited impact on short-term fiscal policies, while at the same time most of the petroleum wealth will be preserved for future generations. I.e. saved and transformed into other types of income generating wealth - mostly financial capital abroad;
- To achieve a stable and transparent phasing in of petroleum wealth over time;
- The Fiscal Guideline does leave an opening for discretionary fiscal policies, e.g. as used during the 2008/2009 financial crisis. During the present economic upturn, the objective of sustainable fiscal policies is to use less than 4 per cent of the stock of the Norwegian SWF.

The Fiscal Guideline will also contribute to stable, rulebased expectations about the use of future petroleum revenues and thus underpin monetary- and exchange rate policies.

For more details see chapter 3 in The National Budget, Report no.1 to the Parliament (2009-2010), especially box 3.1 page 53.

While not explicitly acknowledged, the present Norwegian Fiscal Guideline is akin to The Hartwick Rule- petroleum is an exhaustible resource, and as already alluded to in section VI above, the bottom line of this rule is:

- Use only the expected real rate of return on the realized, present financial capital stock today and save the rest;
- The capital of the Fund, our main Savings Instrument, is preserved for future generations of Norwegians which will inherit large stocks of wealth in the form of financial capital abroad.

Some key features of the Norwegian National Resource Fund are:

- It is wholly owned by the Central Government and is managed by The Ministry of Finance which establishes a fairly detailed investment strategy, a so called benchmark portfolio;
- This investment strategy specifies investment instruments (60 per cent in foreign stocks, 35 per cent in bonds and 5 per cent in real estate), and a detailed geographical distribution of these financial investments;
- The day to day management is carried out by The Central Bank separately from its monetary policy functions,
- Detailed ethical guidelines are established for the Fund, and these are continuously monitored by an independent Ethical Council advising the Minister of Finance.

Aside from the economic principles guiding the Fund based largely, I will argue, on sound and sustainable economic principles as discussed earlier in this paper, there are several interesting governance aspects:

- Norwegian politicians have accepted that all of the revenues go directly into the Fund, and only the expected real rate of return – a rule based criterium -decides largely what they can use in the yearly Fiscal Budgets;
- Local governments receive none of the petroleum revenues directly.

As underlined above, there are constant political economy pressures to use more than The Fiscal Guideline prescribes, and only in two of the years since 2002 has less than 4 per cent been used in the coming year. Recently experts in Statistics Norway argued that 4 per cent may lead to too much domestic spending from our rapidly growing SWF, and argued that a guideline of some 3 per cent should be considered – which still would amount to large amounts in a small, open economy with very low levels of unemployment. Arguments for using 3 per cent of expected, future real rate of return – rather than 4 per cent – are.

- The expected future real rate of return may be less than 4 per cent;
- The Norwegian economy may get a more balanced development path in the longer term if not all resource revenues are phased in less than 20 years after 2001 – given e.g. the expected ageing of the population.

For more details, see Annex 2.

6 Economic- and Fiscal Policies in a Low Income Resource-Producing Country: The Case of East Timor

Timor-Leste became a sovereign state in 2002 following a referendum on independence in 1999.

Some basic demographic- and economic data for Timor-Leste are:

- 1.1 million inhabitants;
- Life expectancy is 59 years;
- 41 per cent of the population lives below the poverty line;
- 47 per cent of the population can read and write;
- 36 per cent has availability to electricity;
- Gross national Income (BNI) per capita is some USD 2.458;
- Gross Domestic Product (GDP) per capita is USD 570.

In 2002 the government asked The International Monetary Fund, IMF, to undertake a mission to evaluate how to avoid a resource curse in Timor-Leste as income from petroleum is the dominant source of income for the new state. Estimated petroleum wealth today is some USD 24 billion, and existing production areas are expected to be empty by 2024-2028.

The IMF mission recommended Timor-Leste to establish a Permanent Fund for East Timor, see Daniel, Krever, Ogata, Tablin and Webber: «Establishing the Permanent Fund for East Timor», IMF 2003.

The Norwegian Petroleum Assistance Program (NPAP), presently involved in some 25 countries, was asked by the government of East Timor to provide technical assistance in 2003, and technical experts and consultants from IMF and The Norwegian Ministry of Finance assisted The Ministry of Planning and Finance in preparing a public discussion paper

in 2004: «Establishing a Petroleum Fund for Timor-Leste», and the Fund was established in 2005 – three years after independence.

According to Daniel et. al., best practice Petroleum Fund principles are:

- The fund should be coherently integrated into the budget process;
- Fund assets should be prudently managed, coordinated with other government financing operations and invested offshore;
- The rules and operations of the fund should be transparent with stringent mechanisms to ensure accountability and prevent misuse, *op.cit.*, page 10.

Several scenarios for a savings rule or a fiscal policy guideline for use of non-renewable revenues in Timor-Leste were considered:

- Only the sustainable income from the government's petroleum wealth should be used to finance the budget every year – estimated sustainable income (ESI). This is the maximum amount that should be appropriated from the Petroleum Fund in that Fiscal Year and leave sufficient revenues in the Fund for an amount of the equal real value to be appropriated in all future fiscal years. See Ministry of Planning – Finance of East Timor: Establishing a Petroleum Fund for Timor-Leste, *op.cit.*;
- A fixed share of petroleum revenue is saved in the Permanent Fund for East Timor, PFET, every year.

The first savings rule was chosen from the outset, and a conservative investment strategy was followed by the PFET. 90 per cent of the assets was invested in cash and high rated bonds, and 10 per cent in shares and other instruments. In 2009 the portfolio of PFET was diversified in line with increased capacity in the fund. 76 of the portfolio is the responsibility of the Central bank (BPA), 20 per cent The Bank of International settlements (BIS), and 4 per cent by a private fund management firm.

In 2009 and 2010, however, the fiscal guideline has not been followed, and hopefully a balance will be found in coming years between using exhaustible revenues domestically and building Timor-Leste gradually and sustainably.

All in all, PFET, a permanent sovereign wealth fund (SWF) has been established in a LIRPC with considerable technical assistance, and it has been operated successfully since 2005.

7 Conclusions

Wealth – natural, real, financial, human and institutional capital – together with the level of technological knowledge, are the forces that drive growth- and development processes. Resource-producing countries must transfer their large endowments of non-renewable natural capital into other types of income generating capital in order to achieve sustainable growth defined as development that lasts.

These countries face two major challenges for economic management:

- How to design and manage efficiently economic - and fiscal policies to sustain growth and development in the face of exhaustibility?
- How should Ministries of Planning- and Finance measure economic performance?

Sustainable fiscal policies should contain the following elements:

- Effective rent capture by governments;

- Saving rules and fiscal guidelines to limit discretionary use of resource revenues domestically;
- A savings instrument regarding resource revenues, preferably a Natural Resource Fund;
- Effective public management.

How two resource-producing countries – Norway and Timor-Leste – have applied these principles in actual and concrete policies was discussed at some length in sections 5 and 6 of this paper:

- The savings rule or fiscal guideline in these countries is akin to the Hartwick Rule: Use only the expected rate of return on the stock of their Natural Resource Funds for domestic budget/consumption purposes and save the rest;
- The Natural Funds are the political responsibility of The Ministries of Planning – and Finance which issue detailed guidelines to the operating managers which are Central Banks and some others.

There are considerable governance and political economy challenges in following these policy principles and rules as LI RPCs naturally want to build their countries. A balance has therefore to be found between this political priority and the lack of domestic absorption and management capacities, so that longer term growth and development may last

Developed resource-producing countries should as far as possible supplement traditional economic indicators like GDP with wealth accounting measures of their stocks of capital in order to judge whether national real wealth per capita is maintained or enhanced – a basic sustainability criterion.

Developing resource-producing countries with less resources and incomplete statistical systems should supplement traditional economic indicators with Adjusted Net Savings (ANS) - a flow measure which equals Net National Income plus expenditures on education minus depletion of exhaustible resources and CO₂-emissions – to assess economic performance and the prospects for sustaining development in the face of exhausting their stocks of non-renewable natural wealth.

ANNEX1. Measuring Wealth and Sustainability. Assessing the Sustainability of Economic Performance in Resource-Producing Countries.

A main message and recommendation in The Stiglitz, Sen and Fitoussi Report: »Report by the Commission on the Measurement of Economic Performance and Social progress« (2009) is:

«The report distinguishes between an assessment of current well-being and an assessment of sustainability; whether this can last over time. Current well-being has to do with both economic resources, such as income, and with non-economic aspects of people's life (what they do and what they can do, how they feel, and the natural environment they live in). Whether these levels of well-being can be sustained over time depends on whether stocks of capital that matter for our lives (natural, physical, human, social) are passed on to future generations», op.cit., page 11.

The Stiglitz Commission also recommends that: »A monetary index of sustainability has its place in a dashboard of sustainability indicators, but under the current state of the art, it should remain focused on economic aspects of sustainability«.

Economic Wealth (EW) as defined in section 2 above is regularly calculated in Norway in the following four steps:

- Step 1: Calculate resource rents of renewable and non-renewable resources (petroleum, fisheries etc), what I above referred to as marked based natural capital (MNC);
- Step 2: Decompose Net National Income;
- Step 3: Convert future streams into present values or wealth estimates;
- Step 4: Calculate the stock of human capital directly through the revenue generating or Jorgensen-Fraumeini method, see Grecker and Lui (2009) for details.

Comparing stock estimates in monetary terms of real economic wealth per capita over time is, of course, similar to The World Bank's definition of Adjusted Net savings – ANS -, see The World Bank: The Changing Wealth of Nations. Measuring Sustainable Development in the New Millennium (2011). Norwegian estimates, which are more complete and based on a modern statistical system developed over many years by Statistics Norway, indicate positive ANS – a flow measure - in the sense that economic wealth in real terms per capita increase over time indicating – viewed in isolation – that Norway seems to be on a sustainable development path.

But what about non-economic wealth (NEW) as defined in section 2 of this paper? Strong sustainable development as we define it requires also that important elements of NEW are not reduced below critical or irreversible levels. We do not know the answer to that question, and I will limit myself here to the following three observations relevant for assessing longer term sustainability in Norway.

Our estimates of non-economic natural capital in the form of physical indicators are incomplete and do not tell us whether we are close to critical and irreversible levels of such types of capital as biodiversity, ecosystems etc – a necessary condition for strong sustainability. We do not know the elasticity of substitution between these types of capital and other types.

The second one regards sustainable public finances which is an indicator in the Norwegian Sustainable Development Indicator (SDI) set. Using generational accounting methods, which

inter alia assume maintaining present rules and expenditure- and tax policies in the longer term or up to 2060, calculations from 2009 show a deficit in public finances of some 3 per cent of GDP of mainland Norway fifty years from now. Although uncertain, including the projection on future petroleum prices and revenues, this SDI indicates that public finances in Norway may not be on a sustainable path despite large but declining petroleum revenues. High future petroleum prices may change this outlook.

The third observation concerns the number of Norwegians in working ages that now are on non-working benefits (disability and sickness benefits) and thus not in the labour force. This SDI is now one in five going up, and one may ask if this is sustainable in the longer term both from an economic and social perspective. This phenomenon, together with expected ageing of the population, may be arguments for using less than 4 per cent of the financial stock of The Governments Pension Fund – Global.

The World Bank computes wealth accounts with simpler methods, in which human – and institutional capita are measured as residuals, and ANS estimates for a large number of countries. These are recommended as useful indicators for whether countries, notably developed and developing RPCs are on sustainable growth paths for use of Ministries of Planning- and Finance.

See The World Bank: «The Changing Wealth of Nations. Measuring Sustainable Development in the New Millennium». Washington D.C., 2011 for further details on these estimates and their use for economic- and fiscal policies.

ANNEX 2. What may Developing Countries Rich on Natural Resources learn from Norwegians Experiences?

Managing the non-renewable natural capital in Norway, a developed country with a fairly robust Public Financial Management System by 1970, over the last forty years or so may be characterized by a process of learning by doing. Some important lessons are:

- The decision at the outset to establish a state oil company (Statoil) participating actively in the exploration and production of petroleum, and not leaving most activities to foreign companies. However, firm government control has been exercised by establishing inter alia SDØE 30 years ago, and ten years ago minority private owners were let in so that the company is now listed on stock exchanges;
- The struggle during the 1970s to establish a robust national tax regime, inter alia to extract the rent into state coffers for the benefit of future generations of Norwegians – and not to foreign petroleum companies;
- The establishment of a Sovereign Wealth Fund – the main Savings Instrument - some twenty years ago;
- Establishing ten years ago with a broad majority in the Parliament a Fiscal Guideline – the main Saving Rule - for the use of petroleum revenues as an integral part of overall economic policies.

Now, Norway is a small and fairly homogeneous society with – all in all – fairly well functioning institutions and a governance system based on a reasonable amount of political cooperation and consensus. How much can be adopted by other RPCs – notably LIRPCs - countries which are different in many aspects and with relatively weak PFM systems?

Firstly, I will argue that Norway actually did suffer through a Norwegian version of the Dutch disease in the late 1970s and for most of the 1980s. Government expenditures were generally too high, structural economic reforms were put off, and there were few firm rules for the use of petroleum revenues. A number of politicians and pressure groups constantly argued for more use of oil- and gas revenues domestically, and successive Norwegian governments were not able to fully stand up to these political economy challenges. Thus lack of clear rules and sustainable economic- and fiscal policies in a developed RPC contributed significantly to a severe economic crisis at the end of the 1980s and early 1990s which in turn triggered the adoption of a Petroleum Fund (1990), fundamental reforms of tax- and labour market policies (1991, 1992) and a modernization of monetary policies and a Savings Rule or fiscal guideline for domestic use of petroleum revenues (2001). Thus over the last 20 years, and after a number of policy mistakes and our most severe economic crisis after World War II, we were largely able to cure our disease and pursue sustainable economic- and fiscal policies.

Volatility of petroleum revenues is now largely taken care of by The Fiscal Guideline. However, it took us some thirty years to adopt this rule based approach, and I think similar rules should be adopted in resource-producing developing countries as appropriate to counteract the «resource curse». To have no clear rules should not be a policy option.

The depletion of nonrenewable resources is counteracted by building up other capital assets through our SWF. Because each year only limited amounts can be absorbed into the domestic economy where unemployment presently stands at some 3,5 per cent of the labour force, they are largely invested in financial assets abroad.

Emerging RPCs and LIRPCs probably do not have twenty years of learning by doing. They should as far as possible in building their countries sustainably:

- Establish rules and instruments for saving revenues from non-renewable resources appropriate to the situation and the political economy challenges in that particular country. Having no such rules or instruments should - as already stressed - not be a policy option;
- Build up Public Financial Management capacity as fast as possible;
- Be aware of the strong and constant pressures to spend such revenues domestically, and the tendencies for many RPCs – also developed ones – to greatly overestimate the ability to absorb such revenues domestically in a profitable and sustainable fashion.

References

- Acemoglu: Introduction to Modern Economic Growth. Princeton University Press, 2009.
- Aghion and Howitt: The Economics of Growth. The MIT Press, 2009.
- Alfsen and Moe: Measuring Sustainable Development. The Norwegian Ministry of Finance, 2008.
- Arrow, Dasgupta, Goulder, Mumford and Oleson: «Sustainability and the Measurement of Wealth». National Bureau of Economic Research Working Paper 16599, 2010.
- Daban and Helis: «A Public Management Framework for Resource-Producing Countries», IMF Working paper WP/10/72.
- Daniel, Krever, Ogata, Tablin and Webber: «Establishing the Permanent Fund for East Timor», IMF 2003.
- Greaker and Lui: National Wealth and the Calculation of the Human Capital Component. Reports, Statistics Norway 2009.
- Hamilton and Hartwick: «Investing Exhaustible Resource Rents and the Path of Consumption», Canadian Journal of Economics, May 2005.
- Hamilton and Atkinson: Wealth, Welfare and Sustainability. Advances in Measuring Sustainable Development. Edward Elgar, 2006.
- Hamilton and Ley: «Sustainable Fiscal Policy for Mineral-Based Economies». Arezki, Gylfason and Sy ed. Natural resources, Finance and Development, IMF (forthcoming).
- Hartwick: «Intergenerational Equity and the Investing of Rents from Exhaustible Resources». The American Economic review, 66: 972-4, 1977.
- Jones: Introduction to Economic Growth. W.W. Norton, 1998
- Ministry of Planning and Finance of East Timor: Establishing a Petroleum Fund for Timor-Leste. Public Discussion Paper, 2004.
- Moe: Wealth, Welfare and Sustainability. What May Resource-Producing Developing Countries Learn from Norwegian Experiences? World Bank Policy Research Paper, 2010.
- Norwegian Ministry of Finance: Indicators for Policies to Enhance Sustainable Development, 2005.
- Norwegian Ministry of Finance: Long-term Perspectives for the Norwegian Economy. Report no. 9 (2008-2009).
- Norwegian Ministry of Finance: The National Budget. Report no 1 (2010-2011).
- Norwegian Ministry of Finance: Managing The Governments Pension Fund – Global 2009. Report no. 10 (2009-2010).
- OECD: Going for Growth. Paris, 2011
- Ossowski, Villafuerte, Medas and Thomas: Managing the Oil Revenue Boom: The Role of Fiscal Institutions. IMF Occasional Paper 260. Washington D.C. 2008.
- Reiche: Sovereign Wealth Funds as a New Instrument of Climate Protection Policy? A case Study of Norway as a Pioneer of Ethical Guidelines for Investment Policy. CICERO Working paper 2008:3.
- Romer: «Endogenous Technological Change», Journal of Political Economy, 1990, vol. 98, no.5.
- Stiglitz, Sen and Fitoussi: Report by the Commission on the Measurement of Economic Performance and Social progress. Paris, 2009.
- The World Bank: The Changing Wealth of Nations. Measuring Sustainable Development in the New Millennium. Washington D.C., 2011.
- UNECE, Eurostat, OECD and The World Bank: Measuring Sustainable Development. New York and Geneva, 2009.