

# RESOURCE REVENUE MODEL FOR A DEVELOPED COUNTRY: CASE OF ESTONIA

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## Abstract

The main objective of this paper is to find appropriate parameters for a resource revenue fund model in the industrial part of the World, with Estonia as an example. Based on literature review and case studies of resource revenue funds, four parameters are suggested: the period of resource revenue flow, the magnitude of the revenue flow relative to GDP, relative development level of the country and institutional development level. Additionally, four resource revenue fund models are characterized: fiscal, mixed, Permanent Income Fund and Sovereign Development Fund.

Analysis shows that for a country where the main natural resource is oil shale (as is the case in Estonia), the most suitable resource revenue fund model would be a blend of fiscal modelling and Sovereign Development Fund.

**Keywords:** natural resource revenue, natural resource funds, oil shale, mining regulation

**JEL classification numbers:** Q320

## Introduction

Despite technological progress, mankind still needs and extracts annually a large variety of natural resources in large scale. Exploitation of exhaustible natural resources depends on the revenue to the society and effectiveness in using that revenue stream. There are several models for public resource revenue collection, revenue fund management and revenue distribution. While most research focus regarding resource revenue has been on developing nations with hydrocarbons revenues, there are substantial mineral resources also in industrial countries, and effectiveness of revenue allocation deserves equal attention there.

Elaboration of Estonian case shows that suitability of a particular resource fund model depends on several characteristics. A suitable and effective resource fund model can positively transform the economy in addition to being just an additional revenue stream. The purpose of this paper is to identify the most suitable parameters of a resource fund model in an industrial setting.

A methodology is developed and applied to case studies in order to draw motivated conclusions. The paper aims to address the following questions: What is the theoretical argumentation of resource funds? What are the main models of resource revenue allocation? What is the empirical experience of resource revenue funds in industrial countries? What is the most suitable resource fund model for Estonia given its main resource and development level?

## 1. Literature overview

The majority of literature on resource revenue deals with hydrocarbons revenue in developing countries. This is objectively understandable as hydrocarbons represent the largest wealth pool and are of major global economic significance. Much of the discussion has been on “resource curse” where major revenue streams lead to a currency appreciation, crowding out of other sectors of the economy, fiscal dependence, conflicts, corruption and political power monopolisation. (Sachs, Warner, 2001). Examples include Cameroon, Iraq, Libya, Venezuela, Mexico (Rey, 2011).

To overcome this resource curse already in 1953 British authorities established Kuwait Investment Authority that is the first of what is today called Sovereign Wealth Fund (SWF). In 2015 total of 68 national or state SWFs manage assets with a market value of 7.2 trillion USD. (Sovereign Wealth Institute) 56% of SWFs receive their revenue from oil and gas, some 10% from metal ores or minerals and many are non-commodity funds like Singapore Temasek or China Investment Corporation. The main logic for oil and gas revenue funds was the immense relative scale of revenue stream that was achievable from particular deposit fairly quickly (Davies, et al 2001). It was the Dutch experience with Groningen gas field that coined the term Dutch disease for currency appreciation and relative expensiveness of other exported products.

Tsani (2012) provides an extensive overview of the pro and con debate on resource funds (RF). Arguments for RFs are: (Tsani , 2012; Baena et al., 2012):

1. Insulate price volatility and exchange rate pressures;
2. improve fiscal discipline as tools of self-constraint upon fiscal actors;
3. serve revenue saving and intergenerational fairness goals;
4. funds can insulate natural resource revenues against rent-seeking, politicized use and corruption, enforcing the conditions of proper management of resource endowments;
5. capital allocation to non-resource sector;
6. Environment restoration can be viewed as capital investment.

The theoretical framework for resource funds is the Permanent Income Hypothesis (PIH) postulated by Milton Friedman in 1957 on an unrelated subject. Applied to resource revenues PIH would mean that states should view windfall revenue as a source of funds that can be levelled for a longer period to attain permanent income. By definition, expenses made out of a PIH oil revenue fund would be stable and would avoid boom and bust cycle (Segura, 2006). To achieve permanent income stream and not to inflate national economy further than private revenue streams from hydrocarbon development would, RF should diversify its assets globally and by asset classes according to Modern Portfolio Theory. Classical example of PIH application would be Government Pension Fund of Norway with current assets valuation of 719 billion USD.

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Several analysts have argued that the permanent income rule is optimal only under special circumstances that do not apply to most developing countries (Collier and Venables, 2008; Van der Ploeg and Venables, 2009) or for revenues streams other than hydrocarbons. Most developing countries, however, are characterized by restricted access to world capital markets, capital scarcity, and potentially high rates of return on domestic investment, especially if the government is able to efficiently supply public infrastructure and to improve the investment climate to raise returns on private investment. Under these circumstances, a more optimal strategy would be to devote a larger portion of resource revenues to high-return public domestic investments, leading to higher growth and, ultimately, a higher economic impact than under the permanent income strategy (Segal, 2012).

Much of the research has focused on developing nations with its apparent institutional problems, which have been present before discovery or exploitation of significant mineral resources. Revenue funds in Kuwait, Iran, Oman, Venezuela, Papua New Guinea, and Nauru are claimed to be institutional failures (Stevens, 2003). The main reason for this failure has been government mismanagement of fund resources. Baena et al (2012) concludes that following practices are essential for getting the management of a fund right: accountability, transparency in decision-making and information access, corporate governance, and clear and sustainable regulations. Also Leong, Mohaddes (2011) argue that “there are levels of institutional quality above which resource abundance becomes growth enhancing”.

Thus, literature suggests intensity and period of revenue stream, economic development level and institutional quality are important factors influencing resource revenue utilization.

**2. Resource fund models**

Overview of resource fund models introduces some empirical examples around the world and their motivations showing how different models have been set up. Levels and means of taxation of natural resources vary across the world (see Otto et al, 2006). In case of oil, mostly ad valorem royalties are being used and effective rate of taxation (defined by World Bank and IMF as direct taxes related to production in relation to profit) is on average 60-70% (IMF 2012). In case of more labour intensive and less profitable iron ore the average effective rate of taxation is around 40-60% and for copper ore 45% (Otto et al, 2006). The main benefit to society is employment, especially in remote rural areas where employment opportunities are otherwise scarce. This argumentation is key for low taxation of mining in Sweden and Finland with 0,02% of the ore value.

Wide varieties of resource revenue models are being used. Apparently, different models have developed in particular economic and political context. Most resource revenue models fall under one of these four categories: fiscal, savings fund, mixed model or the latest trend: sovereign development fund.

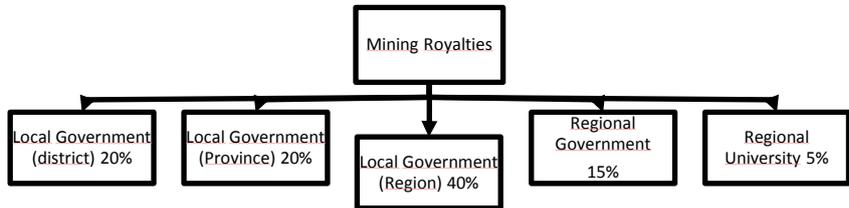
1) Fiscal model

All resource revenues flow into general government budget in United Kingdom, Denmark, Ireland, Australia, USA at federal level and Canadian provinces except for Alberta. Fiscal model serves its purpose for reallocating resource revenues to the population, but there is no saving nor insulation from price volatility.

Baena et al (2012) describe “Investments in the public sector and in infrastructure are usually lavish at period of high commodity prices, encouraging rent-seeking and policy inefficiency. As windfall revenues diminish, governments turn to foreign markets for further sources of revenues, acquiring as a result an unsustainable level of debt”.

2) Mixed model

Under mixed model most of the resource revenue is retained by the government budget and often part of the funds is allocated to the region of resource extraction. Peru is an example of mixed model where both mining royalties and even more significantly 50% of the corporate income tax of the mining companies is redistributed at regional level (see figure 1). In 2007 Peruvian government received total of 2 billion USD from corporate income tax from mining sector. Since 1999 10% of concession fees and privatisation revenues are diverted to Fiscal Stability Fund that has accumulated 7 billion USD by 2012.



**Figure 1.** Mining revenue allocation on regional level in Peru. Instituto de Ingenieros de Minas del Perú (2011)

Until 2012 Australia had only decentralized revenue model where royalties were earned only by provinces. Several resource rich US states like North-Dakota, Wyoming and New Mexico allocate funds to state budgets and into permanent income funds. Indonesia is allocating since 1999 80% of its royalties to mining regions. In Ghana its 20% of revenues are directed to mining regions (ICMM, 2009).

3) Savings funds; Sovereign Wealth Funds

More than half of capital in 68 known global Sovereign Wealth Funds (SWF) are based on natural resource revenue. Investments of SWFs have raised some concerns due their size and potential political motivation. These concerns led to establishment of Santiago principles for best practices on SWF transparency and management developed by SWFs together with IMF and signed so far by 25

nations. Main natural resource of SWFs is oil and gas. Unique characteristic of oil and gas revenue is that the revenue stream can grow within few years several times creating a problem of efficient use of funds and its overheating effect on the economy even if there would be no rent seeking by officials and politicians. (Davies, et al., 2011). Substantial savings funds not generated by oil or gas are maintained by Chile, Peru, Botswana, Mongolia and US state of Wyoming. Lücke (2010) shows how well established institutions can help to sustain public support for long-term savings of resource revenues.

#### 4) Sovereign development fund (SDF)

Javier Santiso (2008) of OECD marked that several Sovereign Wealth Funds have evolved policies where substantial part of their portfolio is invested into domestic assets so that “they are key engines of development finance within their homelands, some very explicitly involved in national strategies of industrial diversification”. Further he cites Malaysia’s Khazanah, Kazakhstan’s Kazyna, Mubadala from Abu Dhabi or Istithmar from Dubai and more conventional SWFs like Temasek Holdings of Singapore and Kuwait Investment Authority that have clear domestic and regional development related investment policies. Santiso argues that, “because of their mandates and objectives SDFs tend to look for secure investments and long-term returns.”

### 3. Developed countries resource funds

A closer look at several resource funds in industrial countries is used for conclusions on most suitable factors of a resource model in a country with strong institutions. The countries to be reviewed were chosen based on data availability, research and variety of different settings. Funds presented are also some of the oldest in World, with the first established in the early 1970s. Thus, these funds have gone through a noteworthy learning curve and have established what may be called best practice. A thorough overview of active resource funds and their fund governance is available at the National Resource Governance Institute.

**Alaska Permanent Fund** was created in 1976. Since 1980 APF is managed by Alaska Permanent Fund Corporation (APFC). Assets worth \$49.9 billion on June 2015 are distributed between stocks 36%, bonds 20%, real estate 12%, private equity 6%, others 30%. Stocks management is widely distributed between different funds: 30 different funds manage stocks, 8 funds for bonds, 6 manage real estate and 20 other type of investments by different funds. Depending on the term of the lease, either 25% or 50% of the revenues collected is deposited in the Permanent Fund. The remainder goes to the General Fund and the School Fund. Total income from oil and gas royalties and rents was \$2.9 billion in 2014.

The APFC performs in-state investment within Fund's real estate portfolio but does no preference to investments in Alaska. After 5 year fund build-up period, from 1982 through 2013, the dividend program paid out about \$18.8 billion to Alaskans through the annual distribution of dividend checks. In year 2012 \$567 million was distributed among 646 805 Alaskan residents making per capita dividend 878 USD. The main motive to establish APFC was to address concern that majority of natural resource benefits are being reaped by non-Alaskans.(Goldsmith, 2010) Winderquist et al (2012) argue that unique resource dividends have contributed to the fact that Alaska is most economically equal of all 50 states in US and helped to increase of equality.

**Alberta Heritage Savings Trust Fund (AHF)** was created in 1976 with \$1.5b initial allocation to AHF and initially 30 % of Alberta’s non-renewable resource revenue was transferred to the Fund. Before establishment of AHF 2/3 of revenue flowed into general province budget and 1/3 to municipalities.

As Alberta experienced tough economic times in the early 1980s, 30% resource revenue allocation was reduced to 15 % and eventually cut to zero in 1987. However the size of the fund and its earnings have enabled annual payments to province budget totalling \$344 million in 2012. By 2014 asset value of AHF had increased to \$18 billion, giving 8.2% rate of return. Asset distribution was 53% global equities, 15% real estate, 10% alternative investments, 22% fixed income. Only 8% is invested in Canadian equities. (Alberta Heritage Savings Trust Fund, 2014)

In the 27 years that all investment yields have been diverted from the Fund to Alberta government revenues, the payout has been excess of \$28b. Baena et al (2012) covers well how investment decisions were politically motivated or at least financially not robust with regards to loans to other provinces (\$1.9bn), non-financial Capital Projects Division (3,5 bn) and majority to Alberta Investment Division (AID). “The primary use of AID was as a private placement banker for various provincial government- owned corporations, including Alberta Government Telephones. These loans totalled over half of AHF total size and many placements failed.” One major success however was saving of Syncrude Oil Sands project.

In 1997 AHF was restructured based on response by Albertans in 1995 survey. The Fund can no longer be used by government for direct economic development or social investment purposes. A new business plan was implemented, with a plan to increase long-term investments and avoid mistakes of previous decades. (Ascah, 2013)

**Permanent Wyoming Mineral Trust Fund (PWMTF)** was established in 1975 and receives about 40% of all Wyoming’s severance tax collections totalling 878 million in 2009. PWMTF market value in 2013 reached \$6,3 billion. The PWMTF grew by \$494 million in the 2011 fiscal year, at 10.2% increase. The fund is limited to allocate up to 55% of assets into equities. While domestic investments are not prohibited, funds stated objective is saving and revenue stabilization. (National Resource Revenue Institute, 2013)

The PWMTF contributed \$215 million of the Wyoming state budget revenues in the 2011 fiscal year. In 2011 total of \$1 billion in severance tax was collected with \$0.44 billion from gas, \$0.29 surface coal, \$0.22 oil. Coal taxation rate was in 2011 thus 0.67USD per tonne. (Wyoming Department of Revenue, 2014) Resource revenue was distributed between Permanent Fund \$377 million, general budget \$240 million, \$268 million to budget reserve, \$23million Wyoming water development fund, \$20 million to municipalities and \$ 26 million to other environmental and development projects.

**New Mexico Severance Tax Permanent Fund (STPF)** was established by the legislature in 1973 to receive severance taxes collected on natural resources extracted from New Mexico lands. Severance tax revenues first pay the required debt service on state severance tax bonds that have funded various capital projects, and the remaining (approximately 12.5%) severance tax receipts are then transferred to the Severance Tax Permanent Fund. The STPF is diversified permanent fund except for its Economically Targeted Investments. STPF had assets of more than \$4 billion in 2012 and Land Grant Permanent Fund (LTPF) leasing state lands for mineral development had assets of \$10.8 billion. In 2012 both STPF and LTPF paid out to state budget and other beneficiaries about the

same amount as they received and made in earnings on assets. Total state revenues on resources other than oil and gas were \$34,9 million for 2010 and \$1 600 million from oil and gas. (New Mexico Taxation and Revenue Department, 2011)

New Mexico STPF has special NM Private Equity Investment Program funding investments that "enhance the economic development objectives of the state; provided such investments offer a rate of return and safety comparable to other private equity investments currently available." This program has \$259 million in net deployed capital, close to 5% of total STPF size. 28 funds have received commitments and invested in 62 New Mexico-based companies. In the period 1993 to 2003 NMPEIP made negative net returns, but since 2004 primary focus has been returns leading to 4,5% IRR of investments (New Mexico State Investment Council, 2015)

### Scandinavian development funds

Three Scandinavian examples show that very developed economies either from resource revenues or other sources establish government investment funds to support equity and fixed asset investments in their domestic economy.

Largest SWF in the world is Norway's Government Pension Fund Global with value of 771 billion USD by end of 2014. Notably, 36,5% of the total value has been achieved due to returns on investments. Much less known is Government Pension Fund Norway (GPFN) with assets valued 22,3 billion USD invested 85% in Norwegian and 15% Nordic region equities (60%) and fixed income assets (40%). Average annual gross return on the GPFN is calculated at 7.3 percent from January 1998 to yearend 2014. The fund is managed by specialized fund manager Folketrygdfondet with clear mandate not to invest more than 15% to any single company equity. Norwegian Ministry of Finance (2015)

Finnish Industry Investment (FII) is in 1995 established development fund with €53 million proceeds of the privatisation of state-owned companies. By year end of 2012 its investments and commitments were €718 million in 500 companies directly or through funds and in 2012 made €57 new investments and made €7,3 million in profit. Finnish Industry Investment (2015)

Swedish Sixth National Pension Fund was created by Parliament in 1996 with \$1.57 billion payment which value to date has increased to \$3 billion with +4.2% annual average return. The Sixth AP Fund invests in unlisted companies and private equity funds. 6AP has 40% of its assets in Nordic regions 60 companies direct equity, 28% in 280 different funds and 32% liquidity. Sixth AP Fund (2012)

What is also relevant is the portion of the revenue allocated between annual public budget and RF. Also relevant is the way RF is set up: its institutional independence, investment policy mandate and amount of payments out of the fund. Table 1 describes some basic characteristics of selected resource funds

**Table 1.** Characteristics of selected resource funds

	Alaska	Alberta	Wyoming	New Mexico	Norway
Share of resource revenue to RF	25%	5.25 or 50%*	40%	12.5%	100% (2014)
Share of earnings payment to the budget	37.5%**	0-70%	40%	100%	0%
Fund institutional independence	Independent corporation/ funds	Independent fund manager	State treasury management	State Investment Council	Public fund manager

\* – dependent on resource revenue respectively below \$10, \$15 or above \$15 billion

\*\* – dividend payment to citizens

In conclusion, empirical evidence displays large variety how resource revenue funds have been set up in historical context and how some part of it is allocated to investments into domestic economy.

### 4. Case Estonia

Estonia is used as a model for an industrialised country with fairly high endowment of mineral resources and collections of resource revenue, yet with no resource fund. The main mineral deposit in Estonia is oil shale that has been mined and processed since 1916 in excess of 1 billion tons. Still reserves in excess of 3.4 billion tons at energy levels of 30 GJ/m<sup>2</sup> are mineable. Oil shale is mainly being used for power generation (11 million tons in 2012) and increasingly for oil production (4 million tons in 2012). Given EU climate policy, balance of oil shale utilization is clearly moving in favour of oil production. Oil shale oil production in 2014 was 660 000 tons which is 11 391 barrels a day or 0.01 mbpd. There are active plans by companies to more than triple oil production by 2020 utilizing some 15 million tons of oil shale and to process the oil into EuroV class diesel fuel. (Steiger, 2013). This development remains conditional of oil prices and regulatory environment in Estonia.

Taxation of the oil shale sector occurs by means of environmental charges that are levied on each ton mined, mining water disposal, mining waste and in processing phase for atmospheric emissions, waste water disposal and depositing of oil shale ash. In total 70% of environmental charges received by the state are from the oil shale sector. Pro rata environmental charges have increased substantially (some 12 to 28 times) between 2002 and 2015, substantially impacting the production costs.

The main aim of applying environmental charges is to motivate companies to invest into production facilities with lower environmental impact and to use natural resources more efficiently and sustainably. A special public Fund for Environmental Investments (FEI) receives funds retained by the state and re-distributes these for environmental projects across the country, from waste and water management to renewable energy and environmental awareness, often as co-financing to capital from the EU's Structural Funds.

There have been several changes on the way charges are distributed, especially during the economic crisis of 2009-2010, when the state urgently needed additional funds. Current law fixes the absolute rate received by municipalities where mining takes place and the rate received, so their revenue will not increase even if the overall tax rate increases. Of the 97 million EUR collected as taxes to

the country's total budget in year 2015, some 47 million are retained by the state for discretionary spending, 34 million EUR is forwarded to FEI and the remaining 16 million EUR is forwarded to municipalities (Rahandusministeerium, 2015).

The state additionally receives substantial revenues as 100% owner of AS Eesti Energia, a major oil shale miner that is also involved in power generation, power distribution and oil shale oil production. Eesti Energia mines and processes roughly 80% of the country's oil shale. Since 2005 Eesti Energia has contributed annual dividend revenues between 50 and 90 million EUR to the state budget.

### Suitable resource fund selection for Estonia

Under the current setup of the Estonian resource revenue model several objectives of RFs are not met. Though FEI funds some renewable energy investments like biogas development, there is no return criteria for investments. Currently there is no revenue saving, thus there is no revenue stream or assets if mining activity stops, which given European Union's climate policy is likely to happen for oil shale some time around 2050. Intergenerational fairness goal is met only so far as can be argued that general fiscal expenditure generates social capital.

Suitable revenue fund model should depending on base resource and development level of jurisdiction achieve following goals: a) value saving over time to achieve intergenerational fairness; b) insulate against price volatility and exchange rate pressures; c) improve fiscal discipline; d) capital allocation to and development of non-resource sectors.

To consider what resource revenue model is suitable for Estonia, four parameters appear most relevant from literature and previous section case studies:

- size of public revenue stream relative to GDP – if the size of revenue stream would be large relative to GDP, it would suggest higher saving in international assets to avoid Dutch disease;
- period of revenue stream – if the revenue stream is short term (few decades) it suggests higher saving ratio into liquid assets to ensure intergenerational equity and lower the risk of short term rent seeking;
- economic development level of the country – if country economic development relative to region is lower it would suggest higher investment in assets contributing to domestic economic development and vice versa;
- institutional development – if the institutional development of the country is strong enough and ensures transparency, it is less likely that investments in domestic assets would encourage rent seeking and corruption.

Table 2 gives overview of data on selected four factors in different jurisdictions and suggested suitable model. The way and variety how resource revenue is being collected seems to have little effect on way of revenue fund model. Norway considers for example also dividend revenue from Statoil S.A. as part of oil revenue and directs it into Government Pension Fund. Factor that is relevant of course is whether stated resource revenue policy is well defined or not, but it is harder to measure or quantify.

**Table 2.** Resource fund factors in different jurisdictions

Region, Resource	Alaska oil	Wyoming oil, gas, coal	Alberta oil sands, oil, gas	New Mexico oil, gas	Estonia oil shale, etc (2015)
Revenue stream % GDP	\$ 3 bn 6.7%	\$ 1 bn 3.6%	\$5 bn 2.7%	\$1,6 bn 2%	€182 mln 1%
Period of revenue stream	50 years	50-100 years	100+ years	50-100 years	100+ years
Development level, GDP per capita in region	\$45 665 110% US average	\$ 47 898 115% US average	\$ 49 562 159% Canada average	\$ 34 133 82% US average	\$ 20 700 67% EU average (2011, PPS terms)
Institutional development WB GI score <sup>1</sup> TI CPI score <sup>2</sup>	High 73	High 73	High 84	High 73	High 64
Suitable model	Fiscal with PIF	Fiscal w PIF	Fiscal w PIF	Mixed PIF/fiscal/ SDF	Mixed fiscal /SDF

1 – World Bank Governance Index

2 – Transparency International Corruption perception Index

Thus due to relatively small and long of revenue stream from oil shale and other minerals, due to lower relative development level and sufficient institutional development, Estonia would do well to both continue fiscal expenditure, but also add Sovereign Development Fund as revenue allocation. This is even more relevant if planned ad valorem oil shale royalty is introduced increasing fiscal variability.

Based on examples in above section, withdrawals from the fund should be limited to some proportion of the investment earnings. The result of such a revenue fund would be a sustainable increase in domestic equity market liquidity and improved access to lending capital. Also such a fund it would create intergenerational fairness and long term vision regarding exhaustible resources.

Estonian case shows that while there is currently some allocation of resource revenue, it is in fact all fiscally consumed and no saving occurs. However, Estonian institutional strength and relatively moderate economic development level suggest that the Development Fund option based on some resource revenue is advisable.

## 6. Conclusion

Resource funds are a valuable instrument that have evolved from a simple savings fund to a means of investment policy for diversifying and developing economies in a transparent way. This paper has shown that resource funds are not exclusive for developing oil and gas rich countries, but can be meaningful tools for other industrial countries with strong institutions, and contribute to effective capital allocation.

While resource funds have evolved in a particular historical context, key factors influencing the choice of the model depend on the nature of the resource, intensity of the revenue stream and development level of the country. Countries with strong institutions and not relatively intense revenue streams benefit from directing resource revenue to domestic capital investments. Particularly in Estonia, it makes sense to divert resource revenues into a Development Fund that can be used to improve equity and lending capital access to the private sector.

Further empirical research is necessary to analyse how a resource fund can best contribute to economic development of a resource rich country. All countries are well advised to have a long term plan for resource revenue flows and revenue utilization.

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# RESSURSI TULU MUDEL ARENENUD RIIGILE: EESTI KAASUS<sup>1</sup>

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Inimkond vajab ja kasutab iga-aastaselt suures koguses erinevaid loodusvarasid. Ammenduvate maavarade kasutamine sõltub oluliselt nende kasulikkusest ühiskonnale ja saadava tuluvoo rakendamise tõhususest. Maavaradest saadava avaliku tulude kogumiseks, tulude jagamiseks ja tulufondide haldamiseks on mitmeid mudeleid. Eesti kaasuse käsitlus võimaldab näha, et sobiva ressursitulu mudeli valik sõltub mitmetest karakteristikutest. Efektiivne ja jätkusuutlik ressursitulu mudel võib peale jätkusuutliku tuluvoo pakkumise anda ka täiendava majandusliku efekti. Antud artikli eesmärk on leida konkreetse riigi jaoks konkreetsetes tingimustes sobiva ressursitulufondi valimiseks sobivad parameetrid. Sobivaim on selline fondi mudel, mis võimaldab saavutada maksimaalset heaolu pikema perioodi jooksul.

1. osas tutvustatakse ressursitulufondide teoreetilist põhjendust. 2. osas esitatakse peamisi ressursitulu jaotuse mudeleid. 3. ja 4. osa käsitlevad arenenud riikide arengufonde ja tehakse järeldused ressursitulu fondi mudeli valiku sobivuse parameetrite kohta. 5. osas kaalutakse Eesti põlevkivi sektorit, keskkonnatasusid ning soovitatakse vastavalt osades 3 ja 4 esitatud parameetritele sobivat mudelit Eestile. Kokkuvõtte annab soovitusid tulevasteks uuringuteks ressursitulu fondide osas.

## 1. Teoreetiline ülevaade

Enamus ressursitulu kirjandusest käsitleb fossiilkütuseid arenenud riikides kui inimkonna üht suurimat varandust ning globaalse kaaluga vara. Suur osa arutlusest keskendub niinimetatud ressursineedusele, mis on põhjustatud kohaliku valuuta väärtuse tõusust, investeeringute vähenemisest teistes sektorites ja põhjustab fiskaalset sõltuvust, konflikte, korrupsiooni ja poliitilise võimu monopoliseerumist (Sachs, Warner, 2001). Probleemsed näited on Kamerun, Liibüa, Iraak, Venezuela, Mehhiko (Rey, 2011).

Sellest ressursineedusest üle saamiseks rajasid sel ajal Kuveiti valitsenud Briti võimud 1953. aastal Kuveidi Investment Authority, mis oli üks esimesi kaasaegseid riiklikke healufonde (Sovereign Wealth Fund -SWF). Täna haldavad enam kui 68 riiklikku või USA osariigi fondi SWF varasid 5,3 triljoni USD väärtuses. 58% nende tuludest tuleb fossiilsete kütuste ja ligi 10% teistest maavarade tuludest. Ülejäänud osa tulust moodustab mitte-maavaralise vara müük (erastamised, maamüük). Nafta ja gaasi tulufondide peamine põhjus on väga suur tulude maht suhteliselt lühikese aja jooksul (20-30 aastat) konkreetsest maardlast.

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<sup>1</sup> Fulltext article „Resource Revenue Model for a Developed Country: Case Estonia“ can be found on the CD attached.

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Tsani (2012) annab põhjaliku ülevaate ressursitulufondide poolt ja vastuargumentidest. Ressursitulufondide loomise peamiste põhjustena tuuakse välja (Tsani, 2012; Baena et al., 2012):

1. Muuta eelarvetulud sõltumatuks hindade volatiilsusest ja valuutakursi survetest;
2. Parandada fiskaalset stabiilsust seades fiskaalsetele otsustajatele enesepiirangud;
3. Saavutada tulude säästmist ning põlvkonnaüleste õiglust;
4. Fondid aitavad korrupsiooni, läbipaistmatu, politiseeritud juhtimise vastu;
5. Kapitali jaotus maavara välistesse sektoritesse;
6. Keskkonnaparandus kui kapitalipaigutus.

Ressursitulufondide teoreetiline raamistik tuleb Milton Friedmani 1957. aastal sõnastatud püsitud hüpoteesist (Permanent Income Hypothesis - PIH), mis rakendatuna ressursituludele võimaldab lühiperioodi ressursitulust saadava hüve tasandada pikas perioodis saadavaks püsitudluvooks. Vältimaks majanduse ülekuumenemist avalike tulude ja erasektori investeringute kombinatsioonis ning saavutamaks püsitudluvoogu, investeerib ressursitulufond varadesse globaalselt vastavalt kaasaegsele portfelli teooriale. PIH klassikalist rakendust kasutab Norra globaalne riigi pensionifond, mille varade väärtus ületab 800 mld USD.

Mitmed analüüsid on väitnud, et püsitudluvo siht on optimaalne vaid teatud tingimustel ning ei sobi enamustele arenevatele riikidele või naftast ja gaasist erinevatele tuluallikatele (Collier and Venables, 2008; Van der Ploeg and Venables, 2009). Arenevates riikides, kus on tugevad institutsioonid, on põhjendatud suurema majandusliku tulemi saavutamiseks enam investeerida avalikesse teenustesse või riigi erasektorisse. Seega osutab kirjandus, et riigi arengutase ja institutsionaalne võimekus on olulised kriteeriumid.

## 2. Ressursifondi mudelid

Maavarade maksustamise meetodid ja tasemed on üle maailma väga varieeruvad (Otto, 2006). Nafta puhul kasutatakse eranditult *ad valorem* põhiseid *royalty* tasusid ning nende efektiivne maksumäär (World Bank ja IMF poolt defineeritud kui otsesed maksutulud suhtes teenitud kasumisse) on keskmiselt 60-70% (IMF 2012). Märksa töö- ja kapitalimahukama rauamaagi ja teiste metallimaakide puhul on see 40-60% (Otto, 2006).

Järgnev loend toob peamised eristuvad ressursitudu mudelite tüübid:

- 1) Fiskaalse mudeli puhul laekuvad kõik ressursitudud otse riigieelarvesse. Näiteks Suurbritannia, Taani, Iiri, Austraalia ja Kanada provintsid peale Alberta;
- 2) Segamudeli puhul laekub oluline osa riigieelarvesse ja ülejäänud kas piirkondlikkusse või keskkonna- või haridusfondi või ka teatud stabiilsusfondi. Hea näide on Peruu, kus tulud jaotuvad kõigi nimetatud sihtfinantseeringute vahel. (Bedoya, 2012)
- 3) Säästufondide/suveräänsete heaolufondide korral laekub enamus või kogu tulu suveräänsesse heaolufondi. Maailmas on 68 sellist fondi, mis on enda tegevuse iseregulatsiooniks vastu võtnud Santiago põhimõtted;
- 4) Suveräänsed arengufondid, mis investeerivad, et aidata kodumaal või lähiriigis kaasa majandusarengule. (Santiso, 2008) Näited on Malaysia Khazanah fond, Kazahstani Kazyna fond, Mubadala fond Abu Dhabis või Istithmar Dubais.

### 3. Arenenud riikide ressursitulufondid

Siinkohal vaatleme mitut USA osariigi ja Kanada Alberta provintsi ressursitulufonde, millest valitud parameetrite kokkuvõte on toodud tabelis 1.

Algselt 1,5 mld USD sissemaksega 1976. aastal rajatud **Alberta Heritage Savings Trust Fund (AHF) tulud** laekusid algselt 30% maavaradest, kuid seda mida? kärbiti pidevalt. Algusaastatel tegi fond mitmeid poliitiliselt laetud otseinvesteeringuid, mis ebaõnnestusid. 1997. aastal teostati põhjalik reform ning 2012. aastaks oli fondi maht kasvanud 26 mld USD juurde andes 8,2% tootluse juures ligi 800 mln USD väärtuskasvu. Fondi tuludest 344 mln USD suunati Alberta provintsi eelarvesse.

**Permanent Wyoming Mineral Trust Fund** saab 40% osariigi nafta, gaasi ja kivisõe kaevandustuludest ning investeerib peamiselt aktsiatesse ja võlakirjadesse.

1976. aastal loodud **Alaska Permanent Fund** varade maht oli 2013. aastal 45 mld USD, mis jagunes aktsiate, võlakirjade, kinnisvara ja investeerimisfondide vahel. Fond püüab leida kinnisvarainvesteeringuid osariigi piirides.

**New Mexico Severance Tax Permanent Fund**'il on eraldi erakapitalil põhinev investeerimisfond mahus 260 mln USD, mille kaudu investeeritakse erakapitali fondidesse. Fond on investeerinud üle 62 New Mehhiko osariigi ettevõtte omakapitali. Kuna erakapitali fondidesse on kaasatud täiendavat kapitali, on saavutatud algse kapitali 6,6 kordne võimendus ja saavutatud kokku 1,9 mld USD investeeringuid ettevõtetesse.

**Tabel 1.** Valitud ressursitulufondide oluliste parameetrite tabel

	Alaska	Alberta	Wyoming	New Mexico
Ressursifondi laekuv ressursitulude osa	25%	5, 25 või 50%	40%	12,5%
Eelarvesse maks-tav tootluse osa	37,5%	0-70%	40%	100%
Institutsionaalne sõltumatus	Sõltumatu asutus/fondid	Sõltumatu fondihaldur	Osariigi rahandus-osakond	Osariigi investeeringute nõukogu

### 4. Eesti kaasus

Eesti peamine maavara on põlevkivi, mida on 1916. aastast kaevandatud 1 miljard tonni elektri ja õli tootmiseks. Geoloogilised varud on endiselt üle 3 mld-t. Kuigi praegu kasutatakse põlevkivi elektri tootmiseks, siis õli tootmine on kasvanud jõudsamalt.

Siiski jääb täna õlitoodangu maht 660 000 tonni juurde aastas, mis on ligi 12 000 barrelit päevas ehk 0,01 miljonit barrelit päevas (võrdluseks: Põhja-Dakota tootmine 2014. aastal oli ligi 1 mld bbl päevas). Keerulises regulatiivses ja naftahinna turukõikumiste keskkonnas ei ole reaalne tootmismahu kasv isegi kui on arendatud uue põlvkonna tehnoloogiad õli tootmiseks.

Eestis on seni põlevkivi maksustatud kaevandatud tonni põhiselt, kuigi *ad valorem* süsteem on välja töötamisel. Peale selle maksustatakse küllalt kõrgelt kaevandusvett, jäätmete ladestamist ja atmosfäärilisi emissioone. Keskkonnatasud on tõusnud eri aastatel 5 kuni 20% võrra ja võrreldes 2002. aastaga on 2015. aastaks tõus teatud tasuliikidel 12 kuni 28 kordne Keskkonnatasude jaotus on: 35% otse riigieelarvesse, 50% keskkonnainvesteeringute keskusele (KIK) ja 15% omavalitsustele, kus toimub kaevandamine. KIK teostab keskkonnavalaseid investeeringuid üle kogu riigi. Olles 100% omanik ettevõttes Eesti Energia, saab riik ettevõtte kasumist täiendavat tulu.

Kaaludes, milline ressursifondi mudel on sobiv Eesti jaoks, osutuvad kirjandusest ja juhtumitest kõige olulisemaks järgmised parameetrid:

- a) ressursitulu suuruse suhe SKPsse – kui ressursitulu suhe SKPsse on suur, tuleb suurem osa säästa, et vältida majanduse ülekuumenemist;
- b) ressursitulu periood – kui ressursitulu saamise periood on suhteliselt lühike (mõned dekaadid), tuleb enam säästa tagamaks enamat ülepõlvkonnalist õiglust ja vältimaks lühiajalisi riske;
- c) riigi majanduslik arengutase – kui riigi majanduslik arengutase on madal, siis soosib see investeerimist kohalikesse varadesse või kulutusi riigi eelarvesse kui aga arengutase on kõrgem, siis on primaarsem säästmin,
- d) institutsionaalne areng – kui riigi institutsionaalne areng on piisavalt kõrge on vähem tõenäoline, et investeeringutega kodumaistesse varadesse kaasneb korruptsioon või ebaefektiivsus.

Seega tulenevalt suhteliselt väikesest ressursitulu mahust, pikaajalisest tuluvooost, suhteliselt madalamast majanduslikust arengutasemest ning kõrgest institutsionaalsest arengutasemest osutub Eestile sobivaimaks fiskaalne mudel, mida võiks integreerida suveräänse arengufondiga. Viimasesse võiks suunata kuni 50% ressursitulust, eriti selle hinnast sõltuva ja fiskaalset volatiilsust tekitava osa. Selline kombinatsioon võimaldaks lühiperspektiivis panustada eelarve kaudu elanike heaolusse ning teha investeerimisfondide kaudu siseriiklikkusse majandusse pikaajalisi investeeringuid säästes olulise osa väärtusest ka tulevastele põlvkondadele.

**Tabel 2.** Ressursitulu faktorid eri jurisdiktsioonides

	Alaska Nafta, gaas	Wyoming Nafta, gaas, süsi	Alberta Nafta, gaas, nafta-liivad	New Mexico Nafta, gaas	Eesti põlevkivi
Tulu maht % GDP	\$ 3 bn 6,7%	\$ 1 bn 3,6%	\$5 bn 2,7%	\$1,6 bn 2%	€180 mln 1%
Tuluvoo periood	50 aastat	50-100 aastat	100+ aastat	50-100 aastat	100+ aastat
Arengutase, SKP per capita piir- konnas	\$45 665 110% USA keskmi-sest	\$ 47 898 115% USA keskmi-sest	C\$ 49 562 159% Kanada keskmi-sest	\$ 34 133 82% USA keskmi-sest	\$ 26 999 71% EU keskmisest (2014, PPS)
Institutsio- naalne areng WB GI skoor <sup>3</sup> TI CPI skoor <sup>4</sup>	Kõrge  73	Kõrge  73	Kõrge  84	Kõrge  73	Kõrge  64
Sobiv mudel	Fiskaalne + püsitudulu- fond	Fiskaalne + püsitudulu- fond	Fiskaalne + püsitudulu- fond	Sega/ arengu- fond	Sega- fiskaalne/ arengufond

## 5. Kokkuvõte

Maavarade kasutamine on oluline ühiskondliku ja akadeemilise diskussiooni teema tagamaks kaasaegse ühiskonna heaolu. Tööjõu- ja kapitalitulu maksustamisel on ka maavarade puhul vajalik leida tuluvoo maksimeerivad individuaalselt sobivad lahendused. Maavaradest teenitavad tulud võivad sobival juhtimisel tagada täiendava tulu varade planeeritud haldamise korral. Kõik ressursitulu teenivad riigid peaks omama terviklikku plaani ammentuvate ressursside tulude rakendamiseks, et piiratud perioodis saadavad tuluvood võimaldamaks hüvesid ühiskonnale võimalikult pikas perioodis. Täiendavat uurimist väärib millised ressursitulu fondimudelid maksimeerivad ühiskonna hüve majandusarengu kaudu.

<sup>3</sup> World Bank Governance Index [http://info.worldbank.org/governance/wgi/sc\\_country.asp](http://info.worldbank.org/governance/wgi/sc_country.asp)

<sup>4</sup> Transparency International Corruption perception Index  
<http://cpi.transparency.org/cpi2012/results/>