



Paulina SZYJA

THE ROLE OF RESOURCES IN SHAPING ECONOMIC DEVELOPMENT – A CASE STUDY

Paulina **Szyja**, PhD – *Pedagogical University of Cracow*

Correspondence address:

Department of Economics and Economic Policy

ul. Podchorążych 2, 30–084 Kraków, Poland

e-mail: paulinaszyja@wp.pl

ABSTRACT: The article describes the issue of the role of resources in shaping economic development. The terminology and theoretical aspects are complemented by a Singapore case study. This little state in South East Asia impresses with its level of development, despite the lack of natural resources and dependence on imports of many products.

The main goal of this article is to present slightly extended resources catalogue and to find the source of shaping economic development in a situation of deficiency, and shortage of natural resources in particular.

KEY WORDS: resources, production factors, development, Singapore

Introduction

The concept of economic development, often mistakenly perceived as a synonym for economic growth, is closely linked to the issue of resources. Nowadays, a lot of publications, Anglo-Saxon in particular, present considerations concerning different kind of conditions which affect economic situation of countries, taking into account a historical perspective. The discussed issues include equipment with all sorts of production factors, as well as several others components: range of opportunities and skills connected with its utilization by other countries.

The main goal of this article is to present slightly extended resources catalogue and to find the source of shaping economic development in a situation of deficiency, and shortage of natural resources in particular. The reflection is particularly focused on a specific case of Singapore. The article bears the thesis that the possibility of shaping economic development in the situation of lack of natural resources depends on the ability to use other disposable factors, or to create them on the basis of appropriate policies and institutions.

The issue of development

The United Nations Development Programme defines the development through the prism of processes that increase the range of choice (UN, 2008, p.18). In turn, Aleksandr Niekpielow identifies the development with positive changes in social welfare (Niekpielow, 2016, p. 33). Tomáš Sedláček emphasises that the desire for progress will stimulate real development (Sedláček, 2015, p. 252). We are therefore faced with Tyree key words, i.e. possibility/choice, change, Progress, and the list in this field is not complete. The two terms mentioned above could have subjective dimension due to extension of the evaluative aspect, e.g. *choice* is better or worse, and *change* is good or bad. In the case of *progress*, we intuitively identify it with something which is better than something else.

The term of development refers mainly to two areas: the social and the economic. The terms *socio-economic development*, which include the two terms above, and *sustainable development*, are also used. All these terms can be found indirectly in the definition of the United Nations, according to which development should be identified with "poverty eradication and promoting sustainable economic growth, sustainable development and global prosperity for all"(UN, 2005, p.3). Each of the terms quoted above, i.e. *poverty, sustainable economic growth, sustainable development, and global prosperity*

requires a separate discussion because of their vagueness and diverse range of their understanding by international organisations and particular countries. But one thing is immutable: all these concepts are interrelated. For example, Tomasz Poskrobko presents range of the term *development* through four categories, ordered historically from the oldest to the most recent: economic growth, economic development, socio-economic development, and sustainable development (Poskrobko, 2012, p. 79–84).

Currently, economic policy is based on two pillars: society and economy. Depending on the adopted model, a primary role might be fulfilled by the economic policy which is dependent to the social policy (residual model). The alternative is a full integrity of both (institutional residual model) (Firlit-Fesnak, Szytko-Skoczny, 2011, p. 145–146). The issue of prosperity and welfare is the common denominator. These issues, among others, are explained by professor Anna Maria Zawadzka: “Prosperity influences on our lives in a material sense – wealth, wages, the environment in which we live, all those aspects facilitate our daily functioning. To some extent, fulfilling the material needs may be associated with welfare, that is, with the objective of human physical health (e.g. in rich countries people live longer than in poor countries) and with satisfaction, life satisfaction. However, the key role in achieving welfare is played by the satisfaction of the basic psychological needs” (Socha, 2015, [http](#)). The issue of material and mental needs have been indirectly included in the Millennium Goals (Millenium Development Goals Indicators, [http](#)) and the Sustainable Development Goals of the United Nations (UN Sustainable Development Goals, 2015, [http](#)). 8 and 17 of the priorities, respectively, set the actions necessary for improving the living conditions, in developing countries in particular, although the SDG from September 2015 strongly emphasise the need for changes to the welfare of the inhabitants of developed countries.

The efforts to shape development are associated with the use of the micro, meso or macro factors. For the purposes of this article, we accept the latter optics.

Factors of the development shaping

Authors such as David S. Landels, Niall Ferguson, Ian Morris, Daron Acemoglu and James A. Robinson present the issue of the role of different factors which impact the socio-economic development in different parts of the world in a historical perspective, and their consequences for today’s division into rich and poor countries. According to their publications, socio-economic development varies due to:

- differences arising from the equipment of different types of factors of production,
- methods of production (e.g. the so-called American system of manufacturing (Landels, 2015, p. 340)),
- standardisation and universalisation of processes (e.g. the use of containers for transport),
- institutional conditions (which includes economic institutions (Acemoglu, Robinson, 2013)),
- social conditions,
- cultural conditions,
- natural conditions.

These determinants, apart from natural sources, are anthropological. They are associated with man, its mentality, habits (e.g. the habit of work), the products of its work, and organisational activities. For example, D. S. Landels indicates: "Nations have adopted the working and maintain good habits, looking for new ways to faster and better enforcement of labour" (Landels, 2015, p. 201). In this way, the progress happens, although it is sometimes suppressed by absolutist rulers, such as emperor Franz Joseph and tsar Nicholas I, who feared the consequences of industrial development which could affect the continuation of this kind of government (Acemoglu, Robinson, 2013, p. 222–231). In turn, a state which begins to reap the benefits of development, the social in particular, comes into contact with the paradox of development, which according to I. Morris "caused disorder and breakdown, as well as greater resistance and greater recuperative powers" (Morris, 2015, p. 663).

There is not one single factor which causes the success of some and the failure of other countries. There are also geographical, climatic, cultural, political, social and institutional conditions which impact the socio-economic development.

However, it should be noted that the impact of each of them is different. These disparities also have their source. They are related to, among others things, the skills to use these elements by particular societies of different countries. This is due to the efficiency of conversion of all kinds of goods, natural resources in particular, through technical achievements and technology. Today's imperative, mainly at the level of production and services, appears to be the efficiency, which on one hand is identified with the possibilities of producing more goods in a shorter time, and on the other with savings stemming from the properties of used machinery and equipment. The latter allows reduction of energy, water, etc.

The resource in economic theory

According to the dictionary, resource is characterized in two ways (PWN, [http](http://)):

- in substantive terms: a certain quantity of something accumulated for use in future;
- in attributive terms: its experience, knowledge, skills.

On the other hand, in the theory of economics, resources are identified with the factors of production, that is, goods necessary for the production of other goods. “The factors of production are labour, capital and land; people’s work; machinery, equipment, buildings and structures shall be the capital (material); the Earth is natural wealth” (Czarny, 2011, p. 218). Labour and land are the original factors because their supply is limited due to natural factors. In contrast, capital is secondary, due to the fact that it is created as a result of the conversion of the original factors (Zieliński, 2010, [http](http://)).

Natural resources and property resources together constitute the national wealth (figure 1).

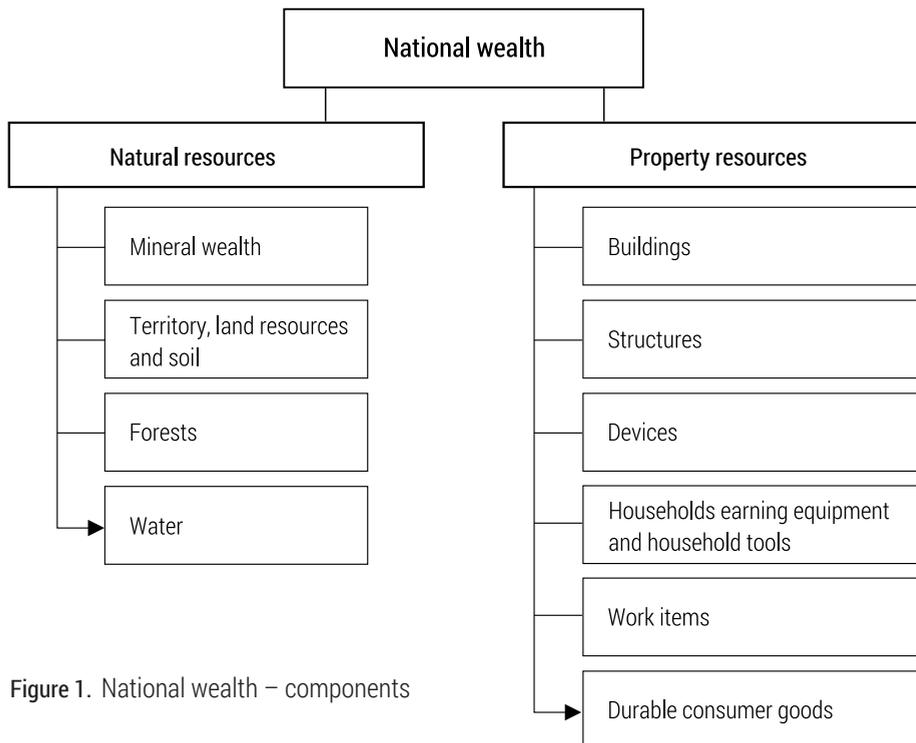


Figure 1. National wealth – components

Source: based on B. Winiarski (ed.) (2006), *Economic policy*, Warszawa, p. 72–77.

Natural resources do not include human labour and therefore it has no value in economic terms. While the amount of resources available to the economy but depends on the cost of acquiring is already issued with one (Górka, Poskrobko, Radecki, 2001, p. 117).

The possibility of using natural resources depends on their presence on the territory of a country or the opportunity to bring them from abroad. In turn, property resources are related to human skills which allow to create technological solutions and, thanks to their use, the formation of different kinds of material goods. As B. Kożuch stresses: “natural resources, along with property resources and labour resources, determine the potential of the economy” (Kożuch, 2013, p. 53). Therefore, for example, the more energy, minerals, and all kinds of wealth there are, the greater are the chances of development of each country. Meanwhile, countries do not always have the both types of resources, and due to the lack of others they depend on imports, for example: Poland imports crude oil and natural gas. Other countries, despite having appropriate reserves, natural in particular, do not have suitable institutional infrastructure or technical infrastructure, which allow for properly using (for example Sierra Leone). Finally, there is a group of states which, due to the nature of political power, spend the profits derived from the extraction of minerals, raw materials or energy for the purposes of consumption for a group of few or for foreign investment, without creating conditions for development within its borders (for example, Russia and, until recently, Saudi Arabia). Furthermore, it should be pointed out that there are some countries which are able to overcome barriers resulting from lack of natural sources, and at the same time take advantages of other development factors, related to human works and skills.

Singapore – “The only red dot on the map”?

Above mentioned question by the president of Indonesia Bacharuddin J. Habibie described in 1998 Singapore, was an excerpt from an article in Asian Wall Street Journal, the meaning of which boils down to statement that Indonesia has 211 million people and it is a big green patch on the map, while Singapore is only a little red dot. Paradoxically, in 2015, when Singapore, a tiny South-Asian country with the area of only 720 km², was celebrating its 50th anniversary, a small red dot was chosen the anniversary logo. Singaporeans are very proud of the fact that, in spite of a relatively small population, small area and lack of natural resources, the country ranks third in the Global Finance’s ranking of the richest countries by the GDP per capita. The indicator for that country for 2015 amounted to 84,821.40 USD. For comparison, Qatar reached 146,011.85 USD and took the first place (Pasquali, 2015, [http](#)).

The GDP in 2015 was 292,732 million USD (38th place according to the World Bank data); for comparison, the United States, which ranked first, achieved a result of 17,946,996 million USD (WB, 2016, [http](#)). Achieving the current success of Singapore required work and commitment of the authorities and the society. Since gaining independence in 1965, Singapore faced two challenges that are best characterized by the following questions:

- how to reduce dependence on shortages?
- how to use efficiently the plentiful?

The first issue is related to limited space for agricultural development. Soil covers only 0.9% of the country's area. As a result, only a limited range of vegetables is grown. This kind of production amounted to 23,039 tonnes in 2014. Another sector is the production of eggs (421 million) and fishing (7,695 tones). In all the three cases, the products are intended for the internal use (Department of Statistics Singapore, 2016, p. 119). The small domestic supply results in the need for food imports. Similar is the situation of water resources. Singapore has no rivers or other natural sources. The only possibility of creating water resources is water runoff. That is the way in which the state is diversifying water resources by: 4 national water reservoirs, water catchment areas, desalination of water from the Strait of Singapore, import water from Johor (a province in Malaysia), and the purification and recovery of water in water plants – NEWater. Nearly 60% of water demand is covered by imports from Malaysia. Due to the difficulties in price agreement with that country, it is likely that the agreement of 1962, which provides for the daily water extraction of 250 million gallons, will not be extended. Taking into account this obstacles, the government has introduced activities to become independent from the Malaysian supply. Therefore, in 2011 the area of acquisition of rainwater was increased from 1/2 to 2/3 of the total area of Singapore. One of the local water catchment areas which is to be used for the aforementioned purpose, the Marina Reservoir, is able to satisfy 10% of the country's water needs (*Singapore's water supply.*, 2015, [http](#)). Similar challenges puts out such solutions as 4 water purification plants, from which 90% of water is using in industry, and the remainder as a result of the enrichment of mineral water is safe for consumption. As a result, NEWater system can ensure the supply of 30% of total demand.

Another example is lack of natural resources. Singapore does not have any fossil fuels. Therefore, it is necessary to import crude oil and natural gas. The latter is a basic raw material for the production of electricity (95% share in production). The state has an LNG terminal constructed in 2013 and two gas transmission networks. Geographical location resulted in attracting investors such as Shell and Esso, which settled crude oil refineries in Singapore. Since the inception of the state, the Singapore authorities have set the

goal of creating friendly conditions for foreign partners, expecting not only jobs creation, but also, above all, the possibility to learn the good practices in the organization of production, provision of services, and the acquisition of new technologies, and cooperation in research and development (See also: Woliński, 2007, p. 198–200). It is worth noting that this little country used circumstances related to Vietnam war (1957–1975), and as a result it turned into a supply port (where a refinery supplying the United States army was built, among other things). In this way Singaporeans gained knowledge, skills, and then access to technology and raw material supply channel. At the same time Singapore began to take actions aimed at diversification of energy resources, which is still continued. In this field, the use of waste was intensified the fastest. Currently, Singapore has four plants where energy is produced from incineration. This kind of infrastructure solutions allows to achieve three objectives: to reduce the area required for the storage of waste, reduction of waste, and production of electricity. It should be noted, however, that in spite of development of this kind of energy and the use of solar panels, their share in the energy balance is currently small, at about 0.0307% (IEA, [http](http://www.iea.org)). The third example relates to the limited area and the space that would allow for the development of industrial production. Singapore has developed, on the basis of the best practices drawn from foreign investors, chemical and petrochemical industry. The highest added value is generated by the following sectors: computer, electronic and optical; biological and pharmaceutical products; chemical products; machinery (Department of Statistics Singapore, 2016, p. 129). At the same time, the aforementioned barrier became the main reason to mobilize acquiring foreign investments in finance and insurance sector. Direct foreign investment in 2014 in Singapore was at a level 1,024,585.7 S\$, over 50% of which related to the financial services and insurance. The largest investments were made by Japan, Hong Kong, Malaysia and, among European countries, the Netherlands, the United Kingdom and Switzerland. In turn, Singapore's foreign investments were up to 619,997.2 S\$ (Department of Statistics Singapore, 2016, p. 97–98). The experience gained during the organization of the production and the acquisition of investments resulted in the provision of consulting services for foreign entities, e.g. in China. It is worth to note a high level of trade services – 389,185.3 million S\$, wherein the size of difference is nevertheless in favour of imports with a predominance 5,304.7 million S\$ (Department of Statistics Singapore, 2016, p. 179).

It should be emphasized that Singapore has based its trade on highly processed products with high added value. The import goods include machinery and equipment (primarily electronic equipment), fuel and petrochemicals, variety of goods (including measuring and optical instruments), followed by

industrial goods and food. Export is based on the same articles. Singapore imports products from China, the United States, South Korea, and Taiwan. In turn its export destinations include China, Hong Kong, Malaysia, the United States, and countries of the European Union (Department of Statistics Singapore, 2016, p. 167–168, 171–172). Said structure of the Singapore's trade was made possible by, among other things, utilizing the strengths of the country. First, they relate to geographic location. Access to the Straits of Singapore made the port of Singapore the world's second-largest port by cargo handling per year (WSC, <http>). Another factor which contributed to the success is related to the development of human capital. Its formation was based on the integration of society in the process of reaping the benefits of economic growth¹, formation of national identity, and unity and education. In this way, it was possible to provide a framework for prosperity and welfare for citizens of Singapore, who constitute a cultural mosaic based on Chinese, Indonesians, Indians and Europeans. The potential of today's society is reflected by the following data: 54% of employed residents are specialized staff employed on legal, managerial and technical positions. 93% of expenditure on the industrial sector's research and development is incurred by the private sector. 91% of the funds spent on R&D relates to the area of technology, biomedical sciences and related. Funds are allocated mainly to the development of human capital. In 2014, Singapore recorded 911 patents (Department of Statistics Singapore, 2016, p. 103–105).

Successes related to the development of trade, export of highly processed goods, development of education, and research would not have been possible without plans for the development and institutions supporting communication infrastructure, such as those indicated by Linda L.C. Lim (Lim, 2014, p. 203–226): The Port of Singapore Authority, The Changi Airport, Building and Construction Authority, Singapore's National Water Agency, and also public related to specific areas of action, for example the Housing and Development Board, the National University of Singapore, A*Star – *Agency for Science, Technology and Research*.

Conclusions

Resources are the key factor which allows the socio-economic development. From the economics point of view, resources are the factors of production, having the primary and secondary character. While in the case of the

¹ This was made possible, among others, thanks to rapid growth in physical capital, as well as maintaining a high level of public and private savings. Please also see: H. Ghesquiere, *Singapore's Success. Engineering economic growth*, Thomson, Singapore 2007, p. 26, 31–32.

deployment of the first is connected with the natural conditions, the secondary effect of the ability to use the primary, regardless of their location.

Singapore is an example of a state which is one of the richest (by GPD *per capita*) country of the world, despite of the lack of natural resources. Despite only 51 years of political independence, it has achieved success in the economic field, which is the dream of the leaders of many countries. It was due to overcoming the development barriers and the use of resources which Singaporeans possessed and those acquired through investments in human capital and relevant institutions, which in turn enabled attracting foreign investment, technological progress, and the development of infrastructure.

40% of expenses in Singapore is related to socio-economic development. According to statistical yearbook, the category "social development" includes: education, nation development, health, environment and water resources, culture, community and youth, social and family development, communications and information, and manpower. In turn, "economic development" includes: transport, trade and industry, manpower, and info-communications and media development (Department of Statistics Singapore, 2016, p. 242).

Infrastructure connected with science, research and development, trade and industry constitute particular axis of economic development of the country. This situation would not be possible if Singapore authorities had not understood the country's limitation since achieving independence in 1965 and the need to overcome them, while the use of other conditions.

Example of Singapore is valuable for many states, especially for Poland. The country has adequate territory, access to the sea, it has all kinds of natural resources, the appropriate human capital, and yet it is unable to properly exploit this potential. This is evidenced by, among others, data on trade, the level of competitiveness, and innovation, in comparison with such a tiny (taking into account the area) country as Singapore.

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