THE EFFECTIVITY AND EFFICIENCY OF OFFICIAL DEVELOPMENT ASSISTANCE IN DRC IN PERIOD 2006 – 2016

Zbyšek KORECKI

University of Defence in Brno, Czech Republic (zbysek.korecki@unob.cz)

DOI: 10.19062/2247-3173.2018.20.4

Abstract: *The article deals with the analysis of the Official Development Assistance on the road transport infrastructure development in choosen countries Central and East Africa. Traffic capacity and its connectivity is likely to play an important role not only economic development, but also to combat the illegal trade in minerals, but also a higher level of willingness of donors to invest in the countries analyzed.*

Road network evaluation in devitality. From the calculated data it is obvious that the highest deviatility reached Maniema province with 3.16. It is caused by the insufficient road connection. The roads have been destroyed during the long lasting turmoil in eastern part of the country. Moreover Maniema is the most isolated province in the country. The connection among its cities as well as with other provinces is very poor. The second worst province is Sud-Kivu neighbouring to Maniema with deviatility 2.32. The province is characterized with low road density in respect to its area and by greater number of hills. On the other hand the province with lowest deviatility 1.37 is mineral rich province Katanga. This number is caused by the location of cities and good roads density.

The lowest accessibility reached Orientale province mainly because of its large area, moreover it lies on southeast which is affected by the continuous crimes and fights thus the connection among cities is poor. Despite the prolonged shape of Kasai-Oriental province, the accessibility is the lowest from the nine analysed provinces. This is caused by the cumulation of the most significant hubs in a very small area in the south. The connection between southern and northern part is via less important roads and by air transportation to the city Lodja in the southern part of the province. The Nord-Kivu is province with second lowest accessibility, due to its small area and concentration of the hubs in eastern part of province.

Connectivity has been used as other indicator of the DRC road network efficiency. It indicates the level of connection among communication hubs. It is obvious that the average connectivity is 0.5. It can be observed that the best connectivity has Bandundu province and Orientale province. There is high density of the national and regional roads in surrounding of the most significant transportation hubs; to observe only national and regional roads was set as an input condition to the measuring of connectivity. On the other hand through the Maniema province only one National road passes as well as it passed through the Nord-Kivu province. However the density of roads in Bas-Congo is relatively good, the roads either did not fulfilled the conditions or they connect the hubs that were not analysed.

Keywords: *cooperation, transport network, infrastructure, Official Development Assistance, DRC*

1. INTRODUCTION

The authors concerns with the ODA provided by the member states of Organization for the Economic Cooperation and Development (OECD) (Sagasti, 2006). The ODA provided to the Democratic Republic of Congo is analyzed. Despite the ODA, the road infrastructure and network is examined.

The aim of the article is to analyze the transport infrastructure and the development of the transport infrastructure capacity and quality in the connection with the Official Development Assistance provided. The evaluation of the road network is, done using the accessibility, connectivity and circuitry indicators. Based on the results from analysis and the author´s calculations the recommendations how to improve the situation are suggested.

2. METHODOLOGY

The road network is evaluated by following four morphological sings: deviatility, accessibility, density, and connectivity.

Deviatility is common that communications do not have linear direction but more or less deviate from it, consequently the connection among various transportation hubs is frequently not linear. This sinuosity of transportation networks is called *deviatility* . Deviatility could be expressed as ratio between the length of communication among chosen transportation hub (lk) and length of direct connection among them (lp). The deviatility (ds) is expressed by following formula (Brinke, 1999) [1]: $d_s = \frac{l_s}{l_p}$. If lk = lp then ds = 1, therefore the deviatility could be equal to 1 or it could be higher than one ds ≥ 1. It means that the deviatility is higher the more it deviates from 1. According to Brinke (1999) deviatility of communication network is influenced by many factors. Accessibility is closely related to hierarchy of communications. If the road or railnetwork is observed more deeply it will be found out that some communications are more important than the others. Those usually connect more important and bigger municipalities and commonly have lower deviatility. In case of road network the roads of 1st grade have lower deviatility than the roads of 2nd grade connecting less important places. The same situation could be observed on hubs. Some of them have higher amount of connections and more communications pass through them. It is obvious that in communication network some meaning-grading system of communication and hubs exists – this is the hierarchy of connections and hubs. (Brinke, 1999)[1].

The connectivity could be expressed as ratio of real number of connectors among transportation hubs (Sd) to maximal number of connectors among transportation hubs (Smax): $K = \frac{S_d}{S_{\max}}$. Minimal and maximal number of connections among hubs (S) is dependent on the number of hubs (u). The minimal number of connections is always lower by one that the real amount of hubs, i.e. $S_{\min} = u - 1$; maximal number of connections is then $S_{\max} = \frac{1}{2} ux(u-1)$

The correlation analysis is used to assess the extent to which the Official Development Assistance provided affect the development in the transport network of the Democratic Republic of the Congo.

To assess the extent of the linear dependence of the two components of a continuous random vector, Pearson´s correlation coefficient ρ has been introduced. (Litschmannová, 2011).

$$\rho = \rho(X,Y) = \begin{cases} \frac{cov(X,Y)}{\sqrt{DX \cdot DY}} \\ 0 \end{cases} \qquad DX, DY \neq 0 .$$

Below some of the coefficient characteristics are listed (Litschmanová, 2011):

1. $-1 \leq \rho \geq 1$, the equality is reached only if there is the linear dependence between the random variables X and Y.
2. If X, Y are independent random variables, then $\rho = 0$.
3. If $\rho = 0$, then X, Y are uncorrelated random variables.
4. If $\rho > 0$, then X, Y are positively correlated (if X increases, then Y increases).
5. If $\rho < 0$, then X, Y are negatively correlated (If X increases, then Y decreases).

It is obvious that Pearson correlation coefficient is an appropriate measure of linear dependence of random variables.

Transport and development

Generelly it could be mentioned that in global perspective there are a lot of factors contribute to the economic and social growth, and the mobility is especially important. It could be easily demonstrated that there are huge differences in the availability of transport at the global level. Efficient transport is fundamental component of economic development, globally as well as nationally.

In order to plan accessibility to respond people´s need Howe (1983) defined six core needs as: *1) Health, 2) Education, 3) Markets, 4) Water, 5) Firewood, 6) Other subsistence tasks (principally farming).* (Elis, 1997)

Most rural transport is on an informal path and track network which connects villages, farms and sources of water. The highest burden is laid on women with regard to collection of water and firewood. Limited access to markets, schools and health facilities is caused by poor accessibility as well. Thereby the people´s productive potential is limited. (Elis, 1997).

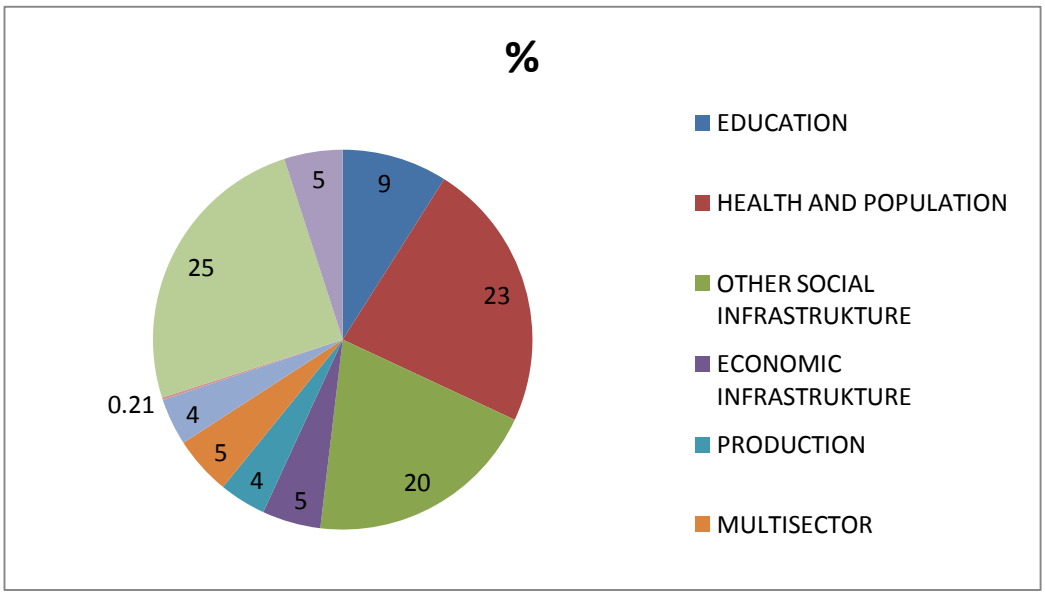
Official Development Assistance in the Democratic Republic of the Congo

The Democratic Republic of the Congo has been among the top 10 recipients of humanitarian assistance in nine of the last ten years. According to OECD statistics ODA reached US$2 107,4 million in 2016. Over half of the money came from the WB, China, the EC, and the UK. ODA increased to US$4,249.27 million in 2011. ODA in 2013 fell to US $ 1.161.57 million. ODA in 2014 reached US $2 400 million. In 2015, the ODA increased to 2 599.0. According to the survey in OECD statistics the most of Official Development Assistance financial sources in DAC flows into the actions relating to the debt 42%, followed by social infrastructure and services 28% where the education; water supply and sanitation belongs to (see Graph 1). The third largest sector where ODA flows is humanitarian aid with 20%. The transport and communication belongs together with energy into the economic infrastructure and services. In the frame of the economic infrastructure and services into the transportation and communication flows only 5%. The small portion of ODA assigned into transportation in DRC could be caused by the pervasive conflicts and thus by the unsatisfactory social conditions.

Therefore there is considerable need of the government to invest into other sectors than is the transportation.

Table 1 shows the distribution of Official Development Assistance in the transportation sector. The biggest portion of money is flowing into the road transport. The government of the DRC realizes the necessity of the developed road network in order to achieve stable development of the country. Several projects to improve the infrastructure are supported and funded by donors, mainly by the World Bank, European Union and China. The water transportation is very common in DRC; it is a cheap mean of transport therefore small portion of ODA is flowing to this sector to improve the standards.

The rail and air transportation sector received only small portion of ODA. It could be caused by the necessity to invest into the road sector because of the poor condition of the roads.



GRAPH 1: ODA in sectors, 2015-2016 (%)
(Source: OECD/DAC 2, edited by authors)

Table 1: ODA in transportation sector, 2005-2013 (milion US$)
(Source: OECD/DAC 2, edited by authors)

	2005	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**
Transport and Storage, total	5,53	8,63	8,37	12,02	30,56	42,56	44,43	52,89	44,82
Transport policy and administration	2,08	4,04	3,64	0,31	0,13	0,01	NA	1,19	0,11
Road transport	3,45	4,55	4,69	11,67	29,93	39,5	37,92	50,64	44,52
Rail transport	NA	NA	NA	0,04	0,31	2,6	6,42	0,21	0,02
Water transport	NA	NA	0,02	0,01	0,04	0,31	0,07	0,02	0,01
Air transport	NA	NA	0,02	NA	0,15	0,03	0,02	0,83	0,16

Transport infrastructure in DRC

The transport infrastructure in the Democratic Republic of the Congo is probably the most challenging in the Africa. The transportation has always been difficult due to vast geography, and low population density. As a result of conflicts roads and railways are obliterated. Since 2003 when the peace was established, some progress has been made in terms of infrastructure development.

Road transport

Lack of adequate roads is a major problem influencing the development of the almost all area of DRC. Just a few roads remain in good condition. Support for foreign investors allowed reconstructed road network in some areas. Since the end of the conflict, reconstructing the road network has been a toppriority. The money from donators covers a lot of major corridors linking Kinshasa and Lubumbashi. (Foster & Benitez, 2011) From ten provincial principal towns only two (Matadi, Bandundu) are connected with the capital city Kinshasa by a road.

Two of them are accessible by water (Kinsangani, Mbandaka) and the remaining six (Kananga, Mbuji Mayi, Lubumbashi, Kindu, Goma, Bukavu, and Kisangani) by air. (Logistic Capacity Assessment 1, 2014)

The road network in DRC consists of 58,358 km of national road; 86,615 of rural roads; and 7,400 km of urban road. According to estimates, around 5% of the national roads are sealed (Logistic Capacity Assessment 1, 2016). As per the official classification the road network could be divided into four main official categories. These are *1) national roads, 2) priority regional roads, 3) secondary regional roads,* and *4) local roads*. Since the most of the roads are damaged or inexistent this subdivision remains theoretical. The Observatorie National des Transports claims that the entire national road network in the Democratic Republic of the Congo was in 2011 about 152,400 km long, with 21,136 km of national roads; 20,124 km of priority regional roads; and 17,245 km of secondary regional roads. (Observatorie National Des Transport, 2011).

The Table 2 provides information about the length of the national roads, priority regional and secondary regional roads in the eleventh provinces of DRC.

Table 2: Roads length in DRC by province, 2011 (km)
(Source: Observatorie National Des Transport)

Province	**National roads**	**Priority regional roads**	**Secondary regional roads**	**Total km**
Bas-Congo	1370	891	869	**3130**
Bandundu	2215	3566	3160	**8941**
Équateur	2970	2781	3158	**8909**
Orientale	3699	3484	3075	**10258**
Sud-Kivu	1037	873	0	**1910**
Nord-Kivu	833	524	389	**1746**
Maniema	1071	1183	1543	**3797**
Katanga	4258	4054	2958	**11270**
Katanga	4258	4054	2958	**11270**
Kasaď Oriental	1446	1627	1234	**4307**
Kinshasa	252	NA	NA	**252**
Total	**21136**	**20124**	**17245**	**58505**

Around 20,000 bridges and 325 ferries occur in the country; majority of them have not been replaced or reconstructed at all. Over 90% of bridges are in poor condition. In the Table 5 the distribution of the bridges by province and type in 2011 can be seen. (Logistic Capacity Assessment 1, 2014)

Table 3: Number of bridges by province and material, 2011
(Logistic Capacity Assessment 1, edited by authors)

Province	**Wooden**	**Metallic**	**Reinforced concrete**	**Total**
Bas-Congo	144	129	84	357
Bandundu	157	82	59	298
Équateur	7	109	7	123
Orientale	112	123	95	330
Sud-Kivu	77	47	20	144
Katanga	17	110	81	208
Kasaď Oriental	8	57	13	78
Kasaď Occidental	23	40	13	76
Kinshasa	0	2	12	14
Nord-Kivu	81	18	25	124
Maniema	65	33	36	134
Total	**691**	**750**	**445**	**1886**

In the Table 4 the condition of national roads could be observed. The term "National roads" covers the National roads, Priority regional roads, and the Secondary regional roads. (Logistic Capacity Assessment 1, 2014)

Table 4: State of national roads by province, 2013 (km)
(Logistic Capacity Assessment 1, edited by authors)

Province	**National roads**	**Good**	**Fair**	**Poor**	**Unknown**
Bas-Congo	2592,3	842,5	326	418,5	1005,3
Bandundu	8286,25	1380,2	606	1510,5	4789
Equater	8407,2	639,7	470,3	2602,2	4695
Kasad' Occidental	3842,5	233,6	340	1765	1504
Kasad' Occidental	3842,5	233,6	340	1765	1504
Katanga	10851,4	1917	1193,4	2173,5	5567,5
Kinshasa	367	341,7	18,1	7,2	NA
Maniema	3365,5	285	288,1	927	1865,4
Nord-Kivu	1526,6	668,3	476	289,5	92,8
Orientale	10973,4	1326	897	2398	6352,4
Orientale	10973,4	1326	897	2398	6352,4

Deviatility

Bandundu province has been chosen to demonstrate the calculation of the shortest road distances and direct distances among five biggest cities in the region. Deviatility is then calculated as the shortest road distance divided by the direct distance among the cities. Table 5 provides an overview of road network distances among chosen cities in Bandundu province and their sum.

Table 5: Road network distance among chosen cities of Bandundu province (km)
(Source: Google Earth, edited by authors)

	Bandundu	**Kikwit**	**Idiofa**	**Bulungu**	**Kenge**	**Sum**
Bandundu	X	393	545	313	439	
Kikwit	393	X	155	86,1	267	
Idiofa	545	155	X	238	419	
Bulungu	313	86,1	238	X	242	
Kenge	439	267	419	242	X	
Sum of length	1690	901,1	1357	879,1	1367	6194,2

Table 6 illustrates direct distances among chosen cities and their sum as well as the deviatility of each city. The average deviatility was then used to calculate average deviatility of DRC.

Table 6: Direct distance among chosen cities of Bandundu province (km), deviatility
(Source: Google Earth, edited by authors)

	Bandundu	**Kikwit**	**Idiofa**	**Bulungu**	**Kenge**	**Average**
Bandundu	x	246	305	192	166	
Kikwit	246	x	86	59	198	
Idiofa	305	86	x	119	283	
Bulungu	192	59	119	x	175	
Kenge	166	198	283	175	x	
Sum of length	909	589	793	545	822	3658
Deviatility	1,86	1,53	1,71	1,61	1,66	1,68

The Table 7 provides overview of values of deviatility for all analysed regions. The values were calculated in the same way as the values for Bandundu region.

From the calculated data it is obvious that the highest deviatility reached Maniema province with 3.16. It is caused by the insufficient road connection. The roads have been destroyed during the long lasting turmoil in eastern part of the country. Moreover Maniema is the most isolated province in the country. The connection among its cities as well as with other provinces is very poor. The second worst province is Sud-Kivu neighbouring to Maniema with deviatility 2.32. The province is characterized with low road density in respect to its area and by greater number of hills. On the other hand the province with lowest deviatility 1.37 is mineral rich province Katanga. This number is caused by the location of cities and good roads density. However the deviatility reached the best value from DRC, the roads are in poor condition.

Table 7: Deviatility for all regions
(Source: Google Earth, edited by authors)

	Deviatility
Bandundu	1,68
Bas-Congo	1,44
Kasai-Occidental	1,56
Kasai-Oriental	1,43
Katanga	1,37
Maniema	3,16
Nord-Kivu	1,38
Orientale	1,88
Sud-Kivu	2,32

Total deviatilita States, Kenya, Tanzania, Uganda and DRC

Table 8: Deviatility for choosen countries
(Source: Google Earth, edited by authors)

	Deviatility
Kenya	1, 23
Tanzania	1,36
Uganda	1,34
DRC	1,8

Accessibility

Accessibility as one of the most important indicators. To measure the accessibility the distance among the cities is used. Results are expressed in kilometres. In the Table 9 the overview of shortest road network distance among the hubs is measured, the values are summarized, followed by the calculation of accessibility expressed in kilometres.

Table 9: Road network distance among chosen cities of Bandundu province, accessibility (km)
(Source: Google Earth, edited by authors)

	Bandundu	**Kikwit**	**Idiofa**	**Bulungu**	**Kenge**	**Average**
Bandundu	x	393	545	313	439	
Kikwit	393	x	155	86,1	267	
Idiofa	545	155	x	238	419	
Bulungu	313	86,1	238	x	242	
Kenge	439	267	419	242	x	
Sum of length	1690	901,1	1357	879,1	1367	
Accessibility	338	180,22	271,4	175,82	273,4	247,77

The calculation of accessibility is illustrated on the Bandundu province. At first, the shortest possible road distances among five biggest hubs in the province were measured and summed up for each city, consequently divided by the number of analysed hubs in the road network, i. e. five. It is obvious from the Table 10, the accessibilities vary significantly from region to region. Considerable role plays also the percentage of mountains, rivers, natural parks and forests. The worst accessibility reached Orientale province mainly due to large area, moreover it lies on southeast which is affected by the continuous crimes and fights thus the connection among cities is poor. Despite the prolonged shape of Kasai-Oriental province, the accessibility is the lowest from the nine analysed provinces. This is caused by the cumulation of the most significant hubs in a very small area in the south. The connection between southern and northern part is via less important roads and by air transportation to the city Lodja in the southern part of the province. The Nord-Kivu is province with second lowest accessibility, due to its small area and concentration of the hubs in eastern part of province.

Table 10: Accessibility for all regions (km)
(Source: Google Earth, edited by authors)

	Accessibility
Bandundu	247,77
Bas-Congo	192,99
Kasai-Occidental	202,38
Kasai-Oriental	95,05
Katanga	244,59
Maniema	410,82
Nord-Kivu	140,02
Orientale	615,68
Sud-Kivu	266,62

	Accessibility
Kenya	326, 16
Tanzania	429, 36
Uganda	260, 88
DRC	268,44

Connectivity

Connectivity has been used as other indicator of the DRC road network efficiency. It indicates the level of connection among communication hubs

Table 11: Connectivity for all regions and the average value for DRC
(Source: Google Earth, edited by authors)

	Sd	Smax	Connectivity
Bandundu	7	10	0,7
Bas-Congo	4	10	0,4
Kasai-Occidental	6	10	0,6
Kasai-Oriental	6	10	0,6
Katanga	5	10	0,5
Maniema	4	10	0,4
Nord-Kivu	4	10	0,4
Orientale	7	10	0,7
Sud-Kivu	6	10	0,6

From Table 11 it is obvious that the average connectivity is 0.5. It can be observed that the best connectivity has Bandundu province and Orientale province.

There is high density of the national and regional roads in surrounding of the most significant transportation hubs; to observe only national and regional roads was set as an input condition to the measuring of connectivity. On the other hand through the Maniema province only one National road passes as well as it passed through the Nord-Kivu province. However the density of roads in Bas-Congo is relatively good, the roads either did not fulfilled the conditions or they connect the hubs that were not analysed.

Table 12: Connectivity for all regions and the average value for DRC
(Source: Google Earth, edited by authors)

	Connectivity
Kenya	0,7
Tanzania	0,9
Uganda	0,6
DRC	0,5

Correlation of ODA and transport network indicators in DRC

To calculate the relationship among Official Development Assistance and the indicators related to the transport infrastructure the data from World Bank database have been used. The correlation coefficient ranges between -1 and +1. If the value of correlation is +1 it means perfect positive correlation, i.e. as one variable move, either up or down, the other variable moves in the same direction. Conversely, value -1 means perfect negative correlation, i.e. as one variable move in either direction, the second variable moves in opposite direction. If the value is 0, there is no relationship between variables. The overview of analysed correlation is illustrated in the Table 18 below.

Table 13: Correlation of ODA and transport infrastructure indicators
(Source: Author´s own work)

	ODA
Railway transport	
Passengers carried	-0,479
Goods transported	-0,4
Air transport	
Passengers carried	0,942
Registered carrier departures	0,988
Water transport	
Liner shipping connectivity index 0,	617
Road transport	
Energy consumption	0,894

As the level of transport infrastructure in DRC is very poor and almost no current data exists, the most suitable indicators were used to set the relationship among them and the Official Development Assistance. Strong relationship can be observed in case of air transport. It can be seen that as the ODA has been increasing till 2012, subsequently, the level of ODA has changed, as already described. The number of passengers carried and number of goods transported has been increasing as well. On the other hand in 2013 the decrease in ODA came and consequently the number of passengers and goods declined as well. The decrease in ODA provided could be caused by the fighting between the March 23 Movement and the government in Nord-Kivu province.

In 2012 the M23[1] rebels took control of Goma where the national airport islocated. Thus the level of air safety is worsening and naturally there is a decrease in number of carried passengers. Strong positive relationship occurs between the road energy consumption and ODA provided to the road sector.

It is in accordance with government plans to invest into the road sector and rehabilitate the road infrastructure. The government also relies, inter alia, on the loans that could be secured by Chinese banks.

On the other hand negative relationship not very strong could be seen in case of railway infrastructure. The transportation via rails is more expensive then when the road is used; moreover the ODA provided into this sector is insufficient.

3. RECOMMENDATIONS

Based on the analysis done in the thesis it is obvious that the transport infrastructure of the Democratic Republic of the Congo is in critical condition. Continuous conflict damaged most of the railway and road networks and the air transport suffers from poor security. However some progress since the official return of peace in 2003 has been made, the situation mainly in eastern part of the country remains critical. Road network in the Democratic Republic of the Congo remains challenging due to low population density and extensive river network. Moreover the vast area is covered by tropical forests, rivers are crisscrossed, thus the road construction is complicated and high amount of bridges is needed. Due to the vast area DRC have to spend huge amount of money only to keep the infrastructure in usable condition. As it was mentioned previously in the text without ensuring peace in the country the development of the road infrastructure is almost impossible or at least very difficult. Continuously after the stabilizing the country the efficient plan for financing the road network reconstruction and maintenance should be devised. The roads damaged during the conflicts should be rebuilt to restore the connections among hubs and thus ensure the basic needs for the citizens.

According to several sources dealing with African infrastructure the price for goods transportation is very high in DRC. The improvement of the road conditions, decrease in deviatility and better accessibility should theoretically lower the prices of road transportation. Additionally, improvements in governing the trucking industry should be done and precise rules should be set. High level of corruption limits the effective use and allocation of funds and Official Development Assistance. It is highly recommended to combat the corruption, set the monitoring mechanisms, and the use of money from loans, funds and donors should be transparent to all. Because of the crisscrossing rivers the road transportation is problematic. Very often the roads end at the river bank because the bridges either do not exist or are in unusable condition. Therefore it is recommended to focus the projects on the reconstruction of bridges and to build new ones in crucial places. Further the road network should be more frequently combined with water transportation in terms of ferry use. The river is major obstacle mainly in the Équateur where the Northern and Southern parts of the province are divided by Congo.

Finally, the road infrastructure development the law and regulatory conditions could be analyzed and the private sector could be involved into the financing.

Official Development Assistance

In the analyzed countries need to integrate the planning of road infrastructure development with economic strategy and regional development. Despite the adoption of various strategies for road infrastructure development and maintenance, the level of damage to the road transport infrastructure is high. The fact is due mainly to the lack of allocated funds, low capacity suppliers and poorly set control mechanisms.The Democratic Republic of Congo has been among the top ten recipients of Official

Development Assistance in last years, the country is highly dependent on the aid. The financial resources are by the highest share used to the actions related to the debt, and social services to provide basic services to the citizens of DRC.

As a consequence the resources flowing into the transportation sector are not sufficient enough, however the amount is increasing. The biggest share of ODA in terms of transport is allocated to the road transport. The government realizes the necessity of improvement the condition of roads destroyed by the continuous wars in order to achieve stable development. Because there is strong relationship between the security and the development of infrastructure it is highly recommended to improve the security levels and restore the peace as mentioned in previous subchapter. There is as well strong interdependency among the different kinds of the transportation. The government and donors should realize the necessity of implementation such projects interconnecting all kinds of transportation. Further the cooperation among government, donors, and private subject should be developed and coordinated. It is very important to ensure the positive socio-economic impact of the realized projects and their sustainability. Moreover the environmental impacts of the project should be analyzed before the implementation. Further the author would recommend allocating more resources among the rail and air transport. Because of the vast area of the country the domestic air transportation is integral part of travelling around the DRC. As mentioned before the security of this kind of transport remains very poor, as well as the facilities are in bad condition. The railways are the most important mean of transport mainly in such parts of country where the minerals are exploited. To attract the donors the government of DRC should develop effective and consistent legislation. Further it should work on improvement of the country profile.

It is recommended to create strict rules when fighting the corruption because it negatively influences the amount of ODA and the money are not reaching the target projects. Finally the ODA should aim to impact the poorest 20% of people living in developing countries.

4. CONCLUSION

The Democratic Republic of the Congo is the second largest country in Africa. The country has been challenging the continuous wars and as a consequence the transport infrastructure quality is poor. The most affected by the turmoil are roads and railway infrastructure, from the poor security suffers the air transport as well. On the other hand the country is endowed with thousands of kilometres of navigable waterways. Traditionally the water transport has been the dominant way of moving around the country. According to World Bank the need to invest into infrastructure is in DRC one of the highest from whole Africa. According to the author the biggest obstacle to build sufficient infrastructure is the low level of security. The country is endowed with precious minerals which bring about persistent fights.

To use its potential it is needed to improve the security level and brought to an end this turmoil. Only then the infrastructure could be reconstructed and the condition of roads and railways could be maintained.

Further barrier is the high corruption. When there are developing programmes the money are stolen at most cases. Moreover the government of DRC does not fulfil its functions. However some progress since the restored peace in 2003 has been made, the situation remains critical mainly in eastern part of the country. Based on the analysis the author has found out that DRC is highly dependent on the Official Development Assistance. DRC has been among the top 10 recipients of humanitarian assistance in nine of the last ten years. The aid is necessary mainly to functioning of basic social services, and the financial sources flows into the actions relating to the debt as well. Contrary, only 3% of overall ODA provided to the country flow to the infrastructure.

From infrastructure sector the highest share of money is invested into the road network. In chapter Recommendation the author proposed some recommendations that should lead to improvement of the all types of transport infrastructure in DRC, i.e. road, railway, water, and air infrastructure. Some suggestions that should increase the efficiency of Official Development Assistance allocation and use has be proposed as well as the necessity to improve the security level has been addressed.

REFERENCES

[1] J. Brinke, *Úvod do geografie dopravy*. Praha: Karolinum, 1999, 112 p. ISBN 80-7184-923-5;

[2] M. Litschmannová, *Úvod do statistiky.* Vysoká škola báňská – Technická Univerzita Ostrava, [online]. 2011, [cit. 2015-02-20]. Available at: http://mi21.vsb.cz/sites/mi21.vsb.cz/files/ unit/ interaktivni _uvod _do_statistiky.pdf;

[3] S.D. Elis, *Key issues in rural transport in developing countries* [online]. Berkshire: Transport research laboratory, 1997, 18 p. [cit. 2015-02-20]. ISSN 0968-4107. Available at: http://r4d.dfid.gov.uk/ PDF/ Outputs/R5591TRL260.pdf;

[4] V. Foster, D.A & Benitez,. *The Democratic Republic of Congo´s Infrastructure: A Continental Perspective* [online]. 2011, 36 p. [cit. 2015-04-30]. Available at: http://elibrary.worldbank.org/ doi/ pdf/ 10.1596/1813-9450-5602;

[5] J. Howe ,*Rabira Garba Transport constraints and the roles of mules and donkeys in Kaffecho Zone*, Ethiopia, http://www.atnesa.org/donkeys/donkeys-howe-transport-ET.pdf;

[6] LOGISTIC CAPACITY ASSESSMENT 1. *Democratic Republic of Congo RoadNetwork* [online]. 2014 [cit. 2015-04-30]. Available at: http://dlca.logcluster.org/display/ public/DLCA/ 2.3+Democratic+ Republic+of+Congo+Road+Network;jsessionid=070953F074698B91DF1C74531A2A1452#id-2.3DemocraticRepublicofCongoRoadNetwork-DistanceMatrix;

[7] LOGISTIC CAPACITY ASSESSMENT 2. *Democratic Republic of Congo RailwayAssessment* [online]. 2014 [cit. 2015-04-30]. Available at:http://dlca.logcluster.org/display/public/DLCA/ 2.4+Democratic +Republic+of+Congo+Railway+Assessment;

[8] LOGISTIC CAPACITY ASSESSMENT 3. *Democratic Republic of Congo Aviation*[online]. 2014 [cit. 2015-04-30]. Available at:http://dlca.logcluster.org/display/public/DLCA/2.2+Democratic+ Republic +of + Congo+Aviation;

[9]LOGISTIC CAPACITY ASSESSMENT 4. *Democratic Republic of Congo Kinshasa N´Djili Senior International Airport* [online]. 2014 [cit. 2015-04-30]. Available at: http://dlca.logcluster.org/display/public /DLCA/2.2.2+Democratic+Republic+of+Congo+Kinshasa+N%27Djili+Senior+International+Airport;

[10] LOGISTIC CAPACITY ASSESSMENT 5. *Democratic Republic of Congo Goma FirstClass International Airport* [online]. 2014 [cit. 2015-04-30]. Available at: http://dlca.logcluster.org/ pages/ releaseview.action?pageId=4227395;

[11]LOGISTIC CAPACITY ASSESSMENT 6. *Democratic Republic of Congo Waterways Assessment* [online]. 2014 [cit. 2015-04-30]. Available at:http://dlca.logcluster.org/display/public/DLCA/2.5+ Democratic+Republic+of+Congo+Waterways+Assessment;

[12] LOGISTIC CAPACITY ASSESSMENT 7. *Democratic Republic of Congo Port of Matadi* [online]. 2014 [cit. 2015-04-30]. Available at:http://dlca.logcluster.org/display/public/DLCA/ 2.1.1+Democratic+ Republic+of+Congo+Port+of+Matadi;

[13] OBSERVATOIRE NATIONAL DES TRANSPORTS. *Annuaire des voies decommunication d´interet general et secondare* [online]. 2011, 57 p. [cit. 2015-04-30]. Available at: http://www.ont-cd.org/ annuaire_voies_nationales.pdf;

[14] OECD 1. *About the OECD* [online]. 2015 [cit. 2015-1-3]. Available at: http://www.oecd.org/about/

[15] OECD . *What do we do and how* [online]. 2015 [cit. 2015-1-3]. Available at: http://www.oecd.org/ about/whatwedoandhow/;

[16] OECD 3. *Organisation for European Economic Co-operation* [online]. 2015 [cit. 2015- 1-3]. Available at: http://www.oecd.org/general/organisationforeuropeaneconomiccooperation;

[17] OECD 5. *Who does what* [online]. 2015 [cit. 2015-1-3]. Available at: http://www.oecd.org/ about/ whodoeswhat/;

[18] SAGASTI, F. *Official Development Assistance: Background, context, issues andprospects*. [online]. 2006, 16p. [cit. 2014-10-10]. Available at:http://www.l20.org/publications/18_Re_ODA_Sagasti.pdf.