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Preface

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PREFACE

Welcome to the 1st International Conference on Environmental Sciences (ICES), a joint effort between the Postgraduate Program in Environmental Sciences of Universitas Negeri Padang, the Indonesian Centre for Environmental Studies Cooperation Agency (BKPSL) and the Indonesian Environmental Sciences Study Program Association (PEPSILI). This international conference is organized by the Postgraduate Program in Environmental Sciences of Universitas Negeri Padang which aims to accommodate the use of innovations and trends in the fields of environment, science, education and technology to overcome global challenges.

The 1st ICES was held on 15-16 November 2018 in the city of Padang, West Sumatera, Indonesia with the theme "Disaster Mitigation, Environmental and Sustainable Development" and sub-themes: (1) Physical Environmental Chemistry, (2) Education, Socio-cultural Economy, Local Wisdom, and Ecotourism, (3) Environmental Mapping Technology, (4) Cross-Environmental Problems. It is an honor for us to have more than one hundred national and international experts, practitioners and observers to explain the results of their research and discuss it through this conference and also to accommodate the collaboration among researchers.

Through a strict peer-review process by the board across disciplines, over 100 selected manuscripts had been presented during the conference from authors and were also qualified to be published into the present conference proceeding.

We would like to express our highest gratitude to eight keynote speakers in the conference: Dr. Ir. Siti Nurbaya Bakar, M.Sc. (Minister of Environment and Forestry), Simone Maynard, PhD (Lead of the Ecosystem Services Thematic Group for IUCN's Commission on Ecosystem Management), Dr. Indrajit PAL (Assistant Professor & Chair Disaster Preparedness, Mitigation and Management Asian Institute of Technology, Thailand), Dr. Jose M. Regunay (University of the Philippines, Diliman, Quezon City), Prof. Dr. Syamsul Maarif (Universitas Pertaanan), Agus Rahardjo. ST. M.Sc. Mgt. (Chairman of Corruption Eradication Commission/KPK), Prof. Dr. Eri Barlian, M.S. (Universitas Negeri Padang) and Dr. Indang Dewata, M.Si (Chairman of BKPSL) for giving some insights and valuable information from their disciplines.

We would like to thank the organizing committee, the member of reviewer and the editors for the kind assistance, precious time and patience to read and revise the manuscripts in this proceeding, as well as to IOP Publishing for their helpful service in publishing the output of this conference.

Thank you very much and we are looking forward for your next participation on next ICES.

General Chairman of ICES2018

Prof. Dr. Eri Barlian, M.S.



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Conference Editors

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Conference Photographs

The 1st International Conference on Environmental Sciences (ICES2018)

November 15-16, 2018, Universitas Negeri Padang, Padang, Indonesia



Chairman of ICES 2018, Prof. Dr. Eri Barlian, M.S., delivered the opening speech on November 15th 2018 at Auditorium of Universitas Negeri Padang



Participant of ICES 2018 at Auditorium of Universitas Negeri Padang on November 15th 2018





Group Photo with Keynote Speaker of ICES



Welcome Party for Participant of ICES 2018, on Wednesday November 14th 2018



Participant of ICES 2018, Room PPS01114



Participant of ICES 2018, Room PPS2103



Partisipant of ICES 2018, Room PPS2102



Partisipant of ICES 2018, Room PPS2101



Participant of ICES 2018, Room PPS01113



Participant of ICES 2018, Room 2104



Participant of ICES, Room PPS01106



One of the participants was explaining the results of his research, in the present of keynote speakers; Simone Maynard, PhD (Lead of the Ecosystem Services Thematic Group for IUCN's Commission on Ecosystem Management) and Dr. Indrajit PAL (Assistant Professor & Chair Disaster Preparedness, Mitigation and Management Asian Institute of Technology, Thailand)

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Peer review statement

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Peer review statement

All papers published in this volume of *IOP Conference Series: Earth and Environmental Science* have been peer reviewed through processes administered by the proceedings Editors. Reviews were conducted by expert referees to the professional and scientific standards expected of a proceedings journal published by IOP Publishing.



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Examining the effectiveness of prodira policy on improving human development index at Province of Gorontalo

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Examining the effectiveness of prodira policy on improving human development index at Province of Gorontalo

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Abstract. The purpose of this study was to determine the effectiveness of the implementation of an education program for the local people policy - *Program Pendidikan untuk Rakyat* (PRODIRA) in the improvement of Human Development Index (HDI) in the Province of Gorontalo. Through PRODIRA the local government has already issued the regional budget (APBD), which the impact of the budget allocation will be measured by the HDI. The research approach employed a qualitative method of semi-structured interview, observation, and focus group discussion on key informants, which involved in compilation and implementation of the PRODIRA in Gorontalo Province. The study result showed that the PRODIRA provided acceleration on educational equity for the population aged 16-18 years, which enrolled at the level of secondary education. PRODIRA has also significantly impact in increasing the Human Development Index of Gorontalo Province during 2012-2016, that it proved by the increasing the literacy rate from 95% to 99.81%, the average number of school years from 8 years to 12.88 years. The result also revealed that the PRODIRA is able to reduce levies in some schools and it increase acceleration of all education services to school age 16-18 years through accelerated national education service. The research recommended that the central government needs to encourage local governments to innovate in developing the PRODIRA in order to achieve the target of to ards the nation of Indonesia is independent and highly competitive in 2025.

1. Introduction

Education is an effort that can accelerate the development of human resources in carrying out the tasks assigned to him. Realizing that, the Indonesian government is committed to providing educational services, as stipulated in the 1945 Constitution of the Third Amendment of article 31 paragraphs 2, which every citizen is obliged to follow basic education and the state finances it [1]. The derivation is reinforced by Law Number 20 Year 2003 on National Education System, in article 34 states that the Government and regional governments guarantee the implementation of compulsory education at the minimum level of basic education without charging [2]. The mandate of this law provides consequences for the central and local governments to allocate funds for free basic education to improve the quality of human resources in minimum standards. Free basic education policy so that every citizen of Indonesia has opportunity to complete the minimum education at the level of basic education in preparation his life free from illiteracy, as well as preparation to continue on higher education level.

The government's commitment, as evidenced by the development and improvement of the national education budget is moving up. This needs to be appreciated as a form of government's promise to pay



attention to the quality of education. The increasing of budget allocation for education is seen as a strategic move to achieve quality education in line with Government Regulation No. 19/2005 providing the legal framework and vision of education standards and quality, which require clear strategic steps to make it happen [3].

The central government's commitment to free basic education is the foundation for conducting basic education as a whole no primary school-age children lack access to schools. In addition, provincial, district and municipal governments are given discretion to provide free education at a higher level towards free education at the secondary and higher education levels. As the statistical data, the 2015 budget of the central government prepares the financing of a 12-year compulsory education program. The 12 year compulsory education requires commitment and support of all parties, namely the center, local government, community and parents [4].

To respond to the increase in compulsory education programs held by the central government, the Province of Gorontalo has launched a Free Education Program policy "in the form of an education program for the people (PRODIRA) which is the flagship program of Gorontalo provincial government since 2012 until now [5]. This policy is based on several considerations, among others, that human resources is a very decisive asset for the retreat Gorontalo. Therefore, the development of human resources has become one of the priorities, and become the flagship program of Gorontalo Provincial Government.

Political will the provincial government of Gorontalo make educational programs for the people (PRODIRA) listed in the financing of regional income and expenditure budget (APBD) is inspired from the idea that education functions to develop ability and shape the character and civilization of dignified nation in order to educate the nation 3 of RI Law No. 20 Year 2003 on National Education System). Local governments make pro-people policies, reducing the burden of the people in financing education. The political will of the government is in line with efforts to improve the human development index (HDI) of Gorontalo province.

Contextually, the problem of low quality of education so far was due to the low source of education costs. This is evident from the 2004 Human Development Index report that placed Indonesia in 111th position under Malaysia 58, Thailand 76 and even Philippines 83 [6]. Hadiyanto explained specific circumstances at the primary level of education, seen from the results of a study conducted by the International Educational Achievement (IEA), which shows the reading ability of Indonesian Elementary School students are in the 38th out of 39 countries studied [7]. Gorontalo Provincial Government's policy as a form of commitment of provincial government of Gorontalo more accelerate the success of free education funding at high school/vocational school level by accommodating the burden of existing costs in the community and parents are given financial incentives from the budget of regional income and expenditure (APBD) Education program for the people (PRODIRA) which was launched by Gorontalo Governor Rusli Habibie and Vice Governor Idris Rahim [8].

The main objective of PRODIRA is to help parents not to burden with school lives that are operational and personnel. Arfan Arsyad explained that PRODIRA is the work program of Gorontalo Provincial Government for the period 2012-2017 which is budgeted through the government budget, Gorontalo Provincial Government to encourage accelerated increase of human development index (IPM) in Gorontalo province [9].

Buhler, Patricia and Alpha define effectiveness as a measure of the targeted output level, or a measure of success for achieving output [10]. Robbins states effectiveness as a degree to which an organization or institution can realize its purpose [11]. Effectiveness becomes an essentially causal concept, in which the meaning to end relationship, and the cause-effect relationship. Panggulu argues that the success of the organization, program is positively dependent on the effectiveness achieved. Therefore, effectiveness is quite important for the work unit, both government and private institutions in order to be able to provide the best service to its stakeholders, in the affairs of public services, in accordance with what has been planned and right on the target [12], as well as in managing PRODIRA policy is an integral part of the free education program mandated expressly in the 1945 Amendment III Law of Article 31 paragraph 2 which stated, every citizen is obliged to follow Basic Education and the

State to finance it. The derivation of Law Number 20 Year 2003 Article 34 affirms that the Government and Local Government guarantee the implementation of compulsory education at the minimum level of Basic Education without collecting fees. To achieve these objectives, the state shall provide free quality education services in accordance with the interests and talents of its citizens irrespective of social, racial, ethnic, religious, and gender status, efforts to carry out the mandate [13].

Puluhulawa and Puluhulawa stated that the policy of free education program is one of the central government policy from elementary level to junior high school, which regulated as compulsory education (WAJAR) 9 years through school operational fund (BOS). In addition, it is also one of the central government's efforts in implementing the constitution on the right of the citizen in obtaining education. However, the free education program that implemented widely in Indonesia has not yet reached the education of Senior High School (SMA) or equivalent so that it becomes a problem for the people who cannot afford [14].

Based on Law Number 32 Year 2004 regarding Regional Government, article 13 states that it has decentralized some obligatory matters of provinces and districts/municipalities, among others, concerning education [15]. The decentralization policy of education affairs to the government provides the discretion of managing education based on local regulations (PERDA) respectively. One of Gorontalo Local Government's policies is Free Education can be exceeded from the national policy of 9-year compulsory education. Gorontalo Province has the initiative to implement education program policies for the people from primary to secondary school level or equivalent, regulated by Local Regulation No. 7 of 2012, on the implementation of the PRODIRA policy, in the general provision it is explained that the Free Education Service (FES) is an education service that complimentary participants students, parents or guardians from the levy of operational costs of education units at secondary education level [16]. Gorontalo Provincial Government is committed to implement free education program for people who send their sons and daughters in high school level or equal. Local government policy on free education is one of the flagship programs of Gorontalo Governor. The free education program has been implemented since January 2012 is expected to provide educational services for the underprivileged/less favoured to complete education up to senior high school level or equivalent.

FES program up to senior high school level is also regulated by Gorontalo Governor Regulation No. 08/2012 on Guidance of Grant Fund Management for School Operational Fund (BOS) of Senior High School, Senior High Vocational School (SMK) and Senior High Islamic School (MA) in the Framework of Free Education Program of Gorontalo Province [17]. Subsequently changed to the Education Program for the People (PRODIRA) as outlined in Gorontalo Provincial Regional Regulation No. 2 of 2012 on Regional Development Plans of Gorontalo Province in 2012-2017 which makes education for the people and free health become the leading program [18].

The conception of PRODIRA has been fully explained in the Regional Regulation No. 7 of 2012 on the Implementation of Education for the People (PRODIRA) in Chapter I General provisions of Article 1 states that PRODIRA is the implementation of educational programs that complimentary learners, parents or guardians from the levy of operating expenses on the unit secondary education except for International Standard Schools (RSBI), International Standard Schools (SBI), and community-managed education units, as well as providing quality improvement costs at primary education and incentives for PAUD educators [19].

The function of the implementation of the policy of PRODIRA by the government of Gorontalo province can be observed in the PRODIRA guideline (Juknis PRODIRA), namely: a) as an effort of expanding and equalizing the opportunity to obtain free, affordable, quality and justice for all citizens, b) as supporting national education programs Universal secondary education held jointly by the Regional Government, and the Education Unit [20].

The objective of the PRODIRA Policy is in accordance with the Decree of Head of Province District Education Office (Dikbudpora) No.188.4/Dikbudpora/ 172.a/Dikmen/ I/2014, among others: a) increase the participation rate of early childhood education, primary and secondary education, b) improve services at all levels of education for the quality and relevance of education, c) Free of charge

for all students of SD/MI/SMP/MTs, and SMA/SMA/MA/ SMK, both state and private school to the operational cost of education unit. From PRODIRA goal it is clear that PRODIRA policies are in line with efforts to increase the Human Development Index (HDI) of Gorontalo [21].

The Human Development Index (HDI) is a comparative measure of life expectancy, literacy, education and living standards for all countries in the world (Bureau of Statistics and UNDP [22]. HDI is used to classify whether a country or region is in an advanced, developed or underdeveloped category and also to measure the influence of economic policy on quality of life [23]. HDI is an important indicator to measure success in building the quality of human life or community/population [24]. IPM explains how people can access development outcomes in obtaining income, health, education, and so on. The HDI introduced by UNDP in 1990 underwent a change in the method of calculation in 2010. Where the Indonesian Statistic Bureau (BPS) is adopted a new methodology change of HDI calculation in 2014 and back casting since 2010 [25].

HDI is formed by three basic dimensions, namely longevity and healthy life (a long and healthy life), knowledge (knowledge), and decent standard of living (decent standard of living). Longevity and healthy living are illustrated by Life Expectancy at Birth (AHH), the number of years expected by newborns to live, assuming that the pattern of death rates by age at birth is the same throughout the age of the infant. Knowledge is measured through the average indicator of Age/Old School and School Expectation. Average School Length (RLS) is the average length (years) of population aged 25 years and over in formal education. School Long Expectancy (HLS) is defined as the length of (year) formal school that is expected to be felt by the child at a certain age in the future.[26]

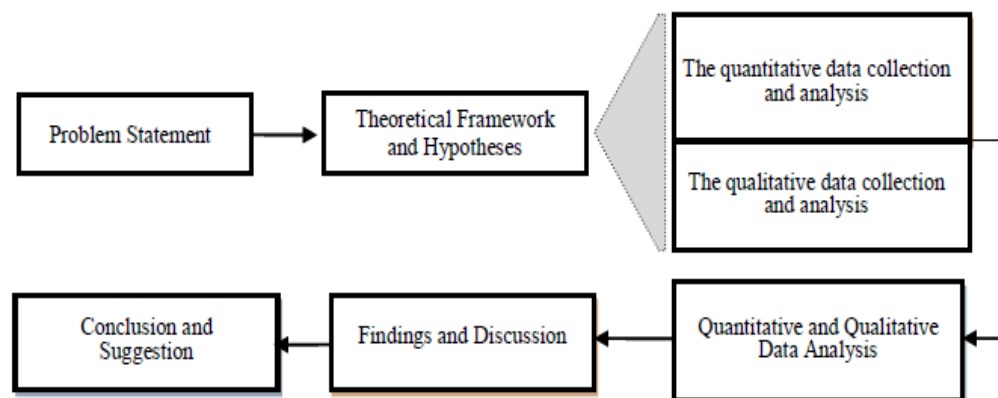


Figure 1. Research methods

HDI is an indicator used to view development progress in the long term, including in seeing the effectiveness of PRODIRA Program implemented by the local government of Gorontalo Province. To see the progress of human development in Gorontalo Province, there are two aspects to note, namely the speed and status of achievement of PRODIRA Program. In Law no. 33 of 2004 on regional financial balances states that the government, both central and local, should allocate 20 percent of the budget for education outside of salaries and official fees. Thus, the educational budget referred to here is included in the development budget category because it does not include routine budgets in the form of salaries and others [27]

2. Methods

The study used a combined method of quantitative and qualitative methods (mixed methods). Creswell states that mixed method is an approach to inquiry that combines or qualitative quantitative forms of research [28], as shown in figure 1.

The purpose of combining methods together, or sequentially in a study, obtained a comprehensive data, valid, reliable and objective. In this research used combination research method (mixed) with design or concurrent embedded model (unbalanced mixture). According to Sugiyono, the combination model or concurrent embedded method is a research method that combines both quantitative and

qualitative research by mixing [30]. Where both quantitative and qualitative methods are used are not balanced. Because this study is the first year, the dominant method used is in quantitative form in qualitative support. The target population is distributed according to the quantitative method established as the primary method in the first year. The survey was conducted at 144 SMA/SMK/MA. The sample calculation is proportionally based on the representation of each regency and city region as Gorontalo Province, as much as 20% of the existing SMA/SMK/MA population. Obtained as many as 29 school units. Respondents who fill the instrument consist of principals, treasurers, teachers, and parents (school committee) so the number of respondents of each school's study there are 4 people x 29 schools as many as 116 people.

3. Results and Discussions

From 116 respondents who gave answers obtained information about the policy of PRODIRA according to Principal, Teachers, Treasurer and Parents Students of SMA/SMK/MA in Gorontalo Province able to increase Human Development Index (IPM) Gorontalo Province.

Table 1. Prodira's policy in improving human development index (HDI) of Gorontalo Province

NO	Assessing items	Category
1	Production policy increased the participation rate of rough (APK) of SMA / SMK / MA	76.90 Good
2	Prodira's policies increase the Net Enrollment Rate (APM) of SMA / SMK / MA	77.76 Good
3.	Prodira's policies increase School Enrollment Rate (APS) SMA / SMK / MA	79.31 Good
4.	Policy Prodira increase the Graduation rate (AL) SMA/ SMK / MA each year	75,52 Good
5.	Prodira policy lowers dropout rates (DO) students SMA / SMK / MA	82.07 Good
6	Policies Prodira completed illiteracy level SMA / SMK/ MA	80,52 Good
7	The prodira policy completes the 12-year compulsory education of	86.56 Good

Table 1 showed that the contribution of Prodira's financing policy is in the "Good" category in completing the 12-year compulsory education. In general, policy of PRODIRA supports the increase of Human Development Index by Average = $625,89/8 = 78.24\%$ (good). This is also confirmed by the interview with one of the principals of SMA Negeri 1 Telaga Biru Gorontalo Regency, PRODIRA which was implemented by Governor Rusli Habibie is a commitment in the effort to build the quality of education, when compared with the previous years are still below. After this PRODIRA is rolled out it looks increasing especially from the number of Human Development Index Gorontalo reach 71,76. This PRODIRA policy has been growing public trust to school, in term of transparency for instance [W/E/A/1/11/2016] dalam Warni T. Sumar [31]

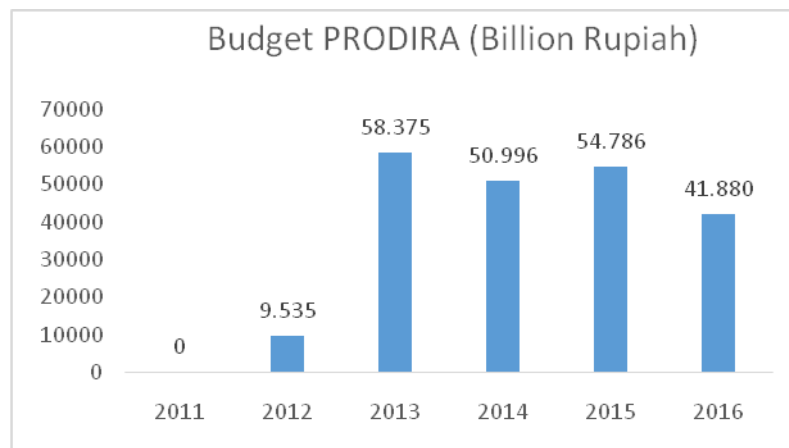
The increasing trend of HDI in Gorontalo Province can be seen from the report of Gorontalo Central Bureau of Statistics 2017, as as shown in figure 2.



Figure 2. Trend of Increase in HDI of Gorontalo Province from 2010-2016 (Source: Report BPS Gorontalo Province [32])

The graph showed that, the HDI of Gorontalo Province continues to progress during the period 2010 to 2016 HDI Gorontalo Province increased from 62.65 in 2010 to 66.29 in 2016. During that period, HDI in Gorontalo Province grew on average by 0, 73% per year. In terms of rate increase has not showed significant figures but in terms of commitment to promote education sector in improving education is felt and evident from the flagship program of the provincial government of Gorontalo. As stated by the Provincial Secretary of Gorontalo that in 2017 the budget for APBD in the education sector rose to 28%. Since 2012, the provincial government of Gorontalo is also prepared budget for PRODIRA in order to accelerate the development of human resources. The total amount of PRODIRA funds for SMA/SMK/MA depends on the total of BOS funds. Before the BOS funds for SMA/SMK/MA were rolled out by the central government, education funding in Gorontalo province was almost assisted by PRODIRA funds from 2011 to present 2016 [33]. The amount of PRODIRA funds varies every year following BOS funds and BOS funds that are rolled out by the central government.

Table 2. Prodira allocation budget from the year 2011-2016 [34]



PRODIRA budget allocation (see table 2) is contributed to the increase of Human Development Index of Gorontalo, according to the report of Gorontalo Provincial Central Statistics Agency which stated that HDI is supported from the knowledge aspect, consisting of two indicators namely Average School Length (RLS) and School Expectation (HLS), as shown in figure 3.

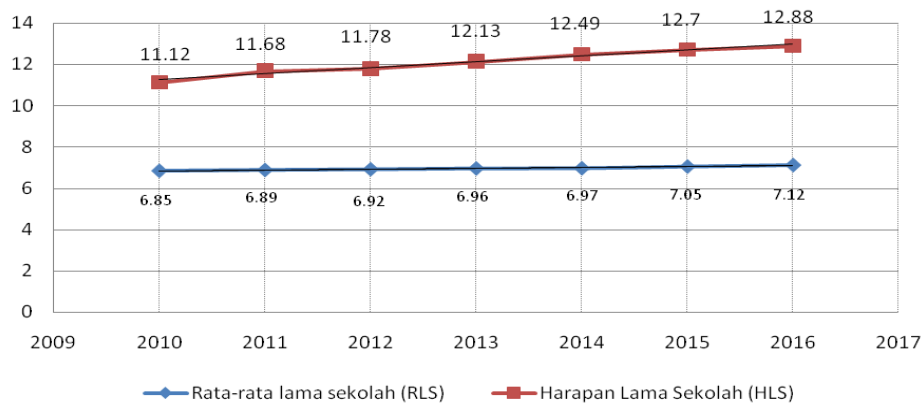


Figure 3. Trend of RLS and HLS of Gorontalo Province from 2010-2016 (Source: Report BPS Gorontalo Province [35])

In accordance with the research report Warni T. Sumar, explained that the implementation of PRODIRA in selected Senior High School in Gorontalo Province is seen from several indicators, such as education condition, 75% support, education index 63% support, Gorontalo provincial superior program 72% support [31]. This is also stated by the Head of Dikbudpora Gorontalo Province Weny Liputo explaining, Contribution Prodira in increasing HDI Gorontalo seen from aspect of average of school length have significant increase which year 2011 about 8,2 year. Then, Central Bureau of Statistics (BPS) data in 2015, the average school rate in Gorontalo is estimated to be 12.88, it means that it continues to increase, and is already above the national rate of 9.2 [37]. Similar things are supported by research Meylina Nikensari and Kuncara, concluded that the level of local government spending on the education sector has a significant influence on HDI, where every change occurs On regional government spending on the education sector will be followed by changes in HDI. From t test, from the results of his research calculations concluded partially the variables of local government spending on education sector have an effect on the HDI ($T \text{ count } 3.023 > t \text{ table } 1, 674116$), while the local government spending on the health sector has no effect on the HDI ($t \text{ hitung } 0,412 < t \text{ table } 1.674116$) [38]. This is proven BPS of Gorontalo Province acknowledged the increase of RLS and HLS positive impact of the government's development in education several years ago. Seen also his contribution to the population aged 15 years and over can read and write has reached 98.44%. Residents aged 16-18 years as many as 7 out of 10 people still in school. This is of course from the support of PRODIRA funds prepared by Gorontalo Provincial Government [39].

The same thing was also explained by Ekosiswoyo, Kardoyo, and Raharjo that the economic benefits of educational investment (rate of return) such as the PRODIRA policy, were higher than physical investment with an average ratio of 15.3% and 9.1% [40]. So the investment of Gorontalo provincial government through PRODIRA fund policy is the right choice to make investment in the field of education very profitable Gorontalo generation forward more and productive in work.

Dwi Atmanti and Hastarini explained that investment policy through PRODIRA by Gorontalo Provincial Government is also in line with the basic assumption of Human Capital theory which states that one can increase their income through education improvement. Each additional one year of school means, improving work ability, productivity and income levels, as well as delaying receipt of income for one year in education [41].

The PRODIRA policy which frees up the operational costs of the students up to the SMA/SMK/MA/LB level certainly contributes greatly in increasing the public interest to continue the level of SMA/SMK/MA/LB even to universities. Since government policies such as this certainly change the public mindset of the importance of government stimulus providing education financing through PRODIRA policy is a long-term macro investment, the benefits of this investment can only be felt after decades [42].

Psacharopoulos, George., This is in line with the World Bank's recommendations since 1960 that define four criteria for human resource development investment, including 1) the need for skilled labor in vocational and technological fields; 2) the expansion of primary and secondary education, Rate of return) with respect to lower costs. 4) justice and equity which shows the importance of the distribution of educational opportunities and other forms of human resource development, both geographically, socially and economically [43]. Thus, Gorontalo Provincial Government is already on the right track to put education as a superior program.

It is clear that the policy of PRODIRA at SMA/SMK/MA level contributes to the improvement of Human Development Index in Gorontalo Province. Moreover, if followed by increased awareness of the community participate in the financing of the acceleration that can be achieved will exceed if only sourced from the central government and local governments only. It requires the participation of people who have a strong economy to support local government efforts and programs to innovate in developing the PRODIRA in order to achieve the target of Towards the nation of Indonesia is independent and highly competitive in [44] and the Indonesian Education Outlook 2025: toward a sustainable world class quality level [45]. It is expected that there is a breakthrough to boost the economic potential of the community to help finance education for the underprivileged while improving the expected quality .

The success of the program underscores the importance of strong political will and commitment that Gorontalo provincial government has shown in launching the initiative and sneering that budget allocation is available to finance its implementation.

4. Conclusions

Based on the research findings and theoretical description above are concluded as follows:

1. The success of education development is in need of financing from various sources, especially from central and local government. The stimulus of education financing through PRODIRA policy by Gorontalo Provincial Government is able to accelerate the achievement of better human development index (HDI) target. This can be seen from the school's expectation number (HLS) growing above the national rate.
2. To maximize the policy of PRODIRA this certainly need support all education stakeholders. Including ensuring this PRODIRA policy can be included in Gorontalo Province *Rencana Pembangunan Jangka Menengah Daerah* (RPJMD) 2017-2022 for the smoothness of its budgeting.

With the commitment of all parties believe Gorontalo Province can advance regional development beyond national development through acceleration of education development by implementing the policy of PRODIRA more effective and efficient.

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