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SERVICES FOR SCIENCE AND EDUCATION

Understanding and Mitigating Poverty Level of Maluku Province in the Context of Indonesian Unity: The Role of Pattimura University

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ABSTRACT

High poverty level of Maluku province relative to 38 provinces in Indonesia has been a concen and focus of discussions among Maluku community leaders for many years. The study provides elaborations on statistical findings regarding poverty of Maluku and discussed solutions to mitigate the poverty in Maluku and possibly leed in prosperity level in Indonesia. The author elaborated on three areas of development; higher education, joint collaborations in exploiting and developing agricultural biodiversity potentials, and exploitation of other natural resources especially gas and oil minings.

INTRODUCTION

Director of Archipelago Solidarity Foundation/Institute (ARSO), sent me her *YouTube* discussion with a politician and researcher at the Center for Strategic and International Studies (CSIS), Jakarta, guided by a journalist [1]. The discussion promote the theme of poverty in Maluku Province/Islands as indicated on statistical data published by Central Biro of Statistics (BPS), Indonesia (Table 1; Fig. 1) [2] [3], the concerns and its possible implication on future development of the Unitary States of the Republic of Indonesia (NKRI). The theme, poverty of Maluku province has been comprehensively elaborated in the discussions of Maluku's scholars, politicians, and leaders for many years now including those organized by ARSO. The results, however, have only been restricted to concerns, there has not been much implication observed or if there is, the impact has not been significant in mitigating poverty gab of Maluku from other provinces in Indonesia.

Table 1: Number and percentage of Poor people in Indonesia, provincial wise. 2024 [2].

Province	Poverty Line - March (IDR)	Poverty Line - September (IDR)	Number of Poor People - March (Thousand)	Number of Poor People - September (Thousand)	Percentage of Poor People - March	Percentage of Poor People - September
Aceh	661.227	665.855	804,53	718,96	14,23	12,64
North Sumatera	642.423	648.336	1.228,01	1.110,92	7,99	7,19
West Sumatera	708.416	714.991	345,73	315,43	5,97	5,42
Riau	697.296	702.620	492,25	473,04	6,67	6,36
Jambi	650.115	658.100	265,42	272,70	7,10	7,26
South Sumatera	554.197	564.462	984,24	948,84	10,97	10,51
Bengkulu	671.095	672.816	281,36	261,15	13,56	12,52

Lampung	586.551	599.018	941,23	939,30	10,69	10,62
Bangka Belitung Islands	908.397	917.673	69,95	78,58	4,55	5,08
Riau Islands	787.211	807.602	138,30	124,96	5,37	4,78
DKI Jakarta	825.288	846.085	464,93	449,07	4,30	4,14
West Jawa	524.052	535.509	3.848,67	3.668,35	7,46	7,08
Central Jawa	507.001	521.093	3.704,33	3.396,34	10,47	9,58
DI Yogyakarta	602.437	613.370	445,55	430,47	10,83	10,40
East Jawa	536.122	547.751	3.982,69	3.893,82	9,79	9,56
Banten	654.213	667.403	791,61	777,49	5,84	5,70
Bali	568.510	580.306	184,43	176,21	4,00	3,80
West Southeast Islands	534.703	540.339	709,01	658,60	12,91	11,91
East Southeast Islands	527.275	533.944	1.127,57	1.107,94	19,48	19,02
West Kalimantan	595.509	611.320	336,08	333,99	6,32	6,25
Central Kalimantan	623.954	641.524	145,63	149,24	5,17	5,26
South Kalimantan	632.739	644.107	183,31	180,20	4,11	4,02
East Kalimantan	833.955	853.997	221,34	211,88	5,78	5,51
North Kalimantan	854.294	876.375	47,83	41,11	6,32	5,38
North Sulawesi	490.719	511.710	186,86	173,30	7,25	6,70
Central Sulawesi	600.872	608.687	379,76	358,33	11,77	11,04
South Sulawesi	459.226	467.991	736,48	711,77	8,06	7,77
Southeast Sulawesi	462.715	473.343	319,71	305,27	11,21	10,63
Gorontalo	473.006	487.578	177,99	170,03	14,57	13,87
West Sulawesi	454.879	460.283	162,19	155,91	11,21	10,71
Maluku	713.503	739.818	297,68	293,99	16,05	15,78
North Maluku	604.460	639.337	83,09	79,69	6,32	6,03
West Papua	793.804	816.613	110,16	108,28	21,66	21,09
Southwest Papua	756.237	791.570	102,27	96,81	18,13	16,95
Papua	674.371	708.811	152,91	161,07	17,26	18,09
South Papua	519.979	...	92,20	...	17,44	19,35
Central Papua	764.115	...	308,48	...	29,76	27,60
Mountain Papua	1.007.060	...	365,44	...	32,97	29,66

Indonesia	582.932	595.242	25.219,20	24.054,72	9,03	8,57

Source: Susenas March 2024/National Socio-Economic Survey (SUSENAS) March 2024, Notes on Data: ...: not available, _ non or zero, NA Data can not be shown, e estimated, r improved, -0 Data can be avoided, * temporary value, **highly temporary value. Latest Update, February 4, 2025.

Increasing use of communicating media especially youtube, enabling different parties promoting their views, ideas, concerns *et cetera* responsibly, to be pondered by audiences including related parties has been considered positive; providing opportunities to marginalized parties to voice what they perceive necessary to be communicated without having to be restricted to only certain electronic and printed media. ARSO seemed to have used the opportunity strategically.

The objective of this study is to provide a perspective on the poverty of Maluku Province/community and propose efforts to mitigate the gab and probably equalized and lead in the scale of development and prosperity among provinces in Indonesia.

METHODOLOGY

The study, in some cases the view, is developed from literature studies, interpretation of published data and figures, experiences in implementing the job as an academic staff at the Pattimura University, Ambon, Maluku; as a lecturer, researcher, extension services provider, including as project manager in joint collaborations with other institutions especially Indonesia-Netherlands project collaborations involving institutions such as Wageningen University and Research (WUR), Agrofair Company Barrendrecht, Maastrict School of management (MAS), Bogor Agricultural University (IPB) Bogor, *N*etherlands Institution for Internationalization of Education (NUFFIC), University of Rotterdam, in addition to other professional activities including as a member of Maluku delegates to lobby the Coordinating Minister of Marine Affairs, Presidential Advisory Board of Indonesia and other activities. In case of original studies reported, the methods implemented include surveys, field observations, measurements, interviews, Focus group discussion (FDG), *et cetera*.

RESULTS AND DISCUSSION

Poverty of Maluku Province and the Relevance

That the bias in data collections through questionnaires used, have also been discussed; slightly reduce the embarrassment of being categorized poor while, in fact rich. For example: the questions related to source of clean water, which placing higher value on tap water while in fact the islands community live on well easily dug next to the living place or water fall situated close to living environment. Another example is defining poverty based on two US dollars, later reduced to one US Dollar per household per day, which in fact, the islands community households live on a bunch of banana, a bucket of plain sago starch, a bucket of yams or coco yam or taro, a net catch of fishes etc., per household per day, which converted to more than two dollars (more than 30 thousands IDR). Even though, it is also understood that economic census also measures the effect of national development including establishment of infra-structures such as fresh water system, market places etc. When observed in detailed scale as pictured in poverty map of Indonesia (Fig. 1), poverty level of Maluku Province shows similarity to other provinces, except that provinces in Papua Island conspicuously different (poorer).

The fact that the poverty level of Maluku Province decrease from fourth poorest to eight poorest position in scale within the provinces in Indonesia (Table 1) [2] in latest development, has also been discussed, is not an implication of regional development rather a result of provincial division in Papua island which relatively poorer causing the increase in number of provinces in Indonesia from 34 to 38 and shift Maluku's poverty level to a better position.

In the context of Maluku's poverty level, should also be noted that the index of happiness in Maluku is very high, rank second out of 38 provinces in Indonesia (Table 2) [4]; a combination which support each other in a negative manner and detrimental, showing the way of living of Maluku people as narrated in a famous folk song "Happy anyways" (*Tau Snang Sa*) with a famous phrase "even though poor, we are happy" (*biar miskin tapi tau snang sa*). This condition is opposed to that of North Maluku Province, a province which is a short while a go separated from Maluku Province, where a low poverty level (rank 11th the richest out of 38 provinces; Table 1) coupled with a high happiness index (rank first out of 38 provinces); although a main part of the richness is contributed by nickel mining, which responsible for the lost of sources of livelihood of indigenous community due to environmental pollution [5].

Table 2: Dimention means of Happiness Index, Republic of Indonesia, Provincial Wise) [4].

38 Provinces	Life Meaning Dimension of Happiness Index						
	Indipendency	Environmental Mastery	Self Development	Positive Relationship With Others	Life Goals	Life Acceptance	Life Meaning Dimension (Total)
	2021	2021	2021	2021	2021	2021	2021
Aceh	75,30	74,71	67,18	73,07	74,21	77,25	73,74
North Sumatera	74,58	74,80	63,70	72,04	74,38	75,65	72,71
West Sumatera	74,41	74,43	67,45	72,72	73,75	76,05	73,25
Riau	74,75	75,30	66,76	72,54	75,76	76,98	73,84
Jambi	75,21	76,46	68,36	74,54	78,72	78,42	75,44
South Sumatera	75,01	75,42	67,10	72,69	76,74	76,76	74,11
Bengkulu	70,89	71,67	62,96	69,39	73,04	72,31	70,21
Lampung	73,64	74,69	67,57	72,49	76,46	77,13	73,81
Bangka Belitung Islands	73,71	74,78	62,29	72,48	74,90	77,68	72,85
Riau Islands	77,02	78,53	71,20	73,83	79,65	78,82	76,68
DKI Jakarta	73,48	74,39	70,20	71,14	75,86	75,88	73,60
West Jawa	72,94	73,81	66,91	71,50	74,62	75,20	72,63
Central Jawa	72,59	74,08	62,45	70,76	74,77	76,08	72,00
DI Yogyakarta	72,27	74,26	65,72	72,10	76,36	75,43	72,86
East Jawa	73,98	74,68	65,32	72,28	75,65	76,21	73,19
Banten	69,91	70,72	65,55	68,83	72,59	73,40	70,28
Bali	73,07	74,07	69,20	71,41	74,25	74,90	72,92
West Southeast Islands	70,83	72,84	60,64	72,45	73,73	75,46	71,18

East Southeast Islands	73,11	74,98	63,48	73,51	73,79	75,00	72,48
West Kalimantan	74,13	75,36	67,66	73,75	75,57	76,85	74,02
Central Kalimantan	74,01	74,67	65,97	73,23	77,57	77,85	74,05
South Kalimantan	73,76	75,40	69,21	73,17	76,91	78,41	74,61
East Kalimantan	75,49	76,96	71,58	74,34	78,52	77,84	75,91
North Kalimantan	76,21	77,80	74,62	75,72	79,48	78,26	77,10
North Sulawesi	77,17	78,58	71,63	78,08	79,71	79,37	77,54
Central Sulawesi	76,80	78,62	70,59	77,70	79,14	80,18	77,30
South Sulawesi	74,02	75,21	67,05	73,45	75,77	77,41	73,96
Southesat Sulawesi	75,89	77,08	69,27	75,77	76,49	78,52	75,63
Gorontalo	76,45	77,92	62,98	75,56	79,05	80,55	75,67
West Sulawesi	74,09	76,87	71,03	75,37	79,71	79,34	76,19
Maluku	80,33	80,84	71,46	78,51	81,71	80,89	79,12
North Maluku	80,67	81,39	70,49	79,38	81,57	81,88	79,41
West Papua	77,26	78,47	66,34	75,55	79,30	80,02	76,37
Southwest Papua	-	-	-	-	-	-	-
Papua	73,71	73,47	65,37	73,42	71,73	74,14	72,07
South Papua	-	-	-	-	-	-	-
Central Papua	-	-	-	-	-	-	-
Mountain Papua	-	-	-	-	-	-	-
Indonesia	73,56	74,52	66,09	72,16	75,33	76,15	73,12

Information Data : The 2017-2021 Happiness Index calculation method is different from the 2014-2021 method. The 2017-2021 Happiness Index is measured using 3 (three) dimensions: Life Satisfaction, Affect, and the Meaning of Life (Eudaimonia). While the previous method (2014), the Happiness Index is only measured using one dimension, namely Life Satisfaction.

Political will of the central government; says ARSO Director [1], is one of the main cause, ignoring the development of an area inhabited by Melanesian, a tribe different than that of other major and dominant tribes (ethnic groups) in Indonesia. With an annual budget as high as thee trillion rupiahs (more than 2 billions provided by central government) [6] obviously a little too small to develop a province of more than six hundred islands, requiring specific infrastructures, difficult connectivity and a long span of governing. Efforts to promote a status as island province with a consequence of adjustment (increasing) in annual budget, up to recent time, has not been ratified (approved) by the parliament let alone its implementation.

From the perspective of geopolitics, especially in view of recent situation concerning security of many nations in the world, it is necessary for government of the President General Prabowo Subianto to not letting the lack of economic development of Maluku and other provinces in the

eastern part of Indonesia escalate into political and ideology matters. On the request of the moderator [1], regarding the escalation into politics and ideology, CSIS resercher indicated that political elites are in one accord on the ideology and the unity of Indonesia. The recent generation, generation-Z, many are member of parliament, however, are not completely understood the states ideology and unity of the country. In author's view, even the construction of recent cabinet, the selection was weighted more on representing political partners and companions during presidential campaign, rather than on vision and sustainable development.

Related to "political will" of the government and elites of the central government, the author once exemplified an observation on the development of Republic of Germany (*Bundesrepublik Deutschland*) during early 2000-s following the unity (*Einheit*) of Democratic/Socialist Republic of East Germany (GDR) and the Federal/Democratic Republic of West Germany, with the fall of Berlin Wall, 1993. East Germany with a crumbled economy was elevated causing reduction on the economy of West Germany which was among the first in the world during the era. Employee of East Germany received the wages/celery of 80% while the employee of West Germany received a full payment (100%) of celery. Among various efforts and policies, political slogan of the elite politicians, frequently appeared on the media "Was geoert zusammen, wachs zusammen" (what belongs together, grows together) provided an encouragement and indicating willingness to develop and equalize the economy of two recently united countries. Around the middle decade of the 2000-s, as the author returned to Indonesia, the economic gap and segregated treatments seemed no more of important issues in Germany [7].

Economic poverty, cultural poverty are closely related to literate poverty. Without studying statistical data, every high school graduate of the eighties up to recent time knows that the education in Indonesia, especially higher education, are divided into three categories representing the level of quality; Western Indonesia or group-1 (used to be called pioneer -1) consist of universities such as University of Indonesia (UI), University of Gajah Mada (UGM), Bandung Technological Institute (ITB), Bogor Agricultural University (IPB), University of Pajajaran (UNPAD), University of Brawijaya (UNIBRAW) etc. followed by middle Indonesia, group-2 or pioneer-2 covering a number of universities in Sulawesi, Sumatera and other islands such as University of Hasanuddin (UNHAS), University of Sriwijaya (UNSRI), University of North Sumatera (USU), University of Udayana Bali (UNUD) etc., and Eastern Indonesia, group-3, pioneer-3 covering universities in Sulawesi, Maluku and Papua islands such as University of Halu Oleo (UHO) South East Sulawesi, University of SamRatulangi (UNSRAT) North Sulawesi, University of Pattimura (UNPATTI) Ambon, Maluku, Cendrawasih University (UNCEN) Papua and others. Despite a number of necessary policies implemented during tens of years of development, the quality gab stays unaltered.

Solutions Provided and the Impacts

Efforts through lobbying the central government and high political figures at national level, voicing the concerns through seminars, webinars, making attitude statements, publications in electronic and printed media in directing the attention and promoting supporting policies both in programs and budget, have been exercised extensively; many of them involving parties such as Archipelago Solidarity Foundation (ARSO), Pattimura University (UNPATTI), University of Darusallam (UNDAR), Maluku Christian University (UKIM), State College of Christian Protestant Religion (STAKPN) Ambon, Center for the Conservation of Maluku's Biodiversity

(CCMB), Ambon Municipality Government, Department of Culture, Directorate of Higher Education of Indonesia, Indonesian Ministry of Tourism, press (Kompas and Sinar Harapan) and others. To some extent, success of such efforts can be observed. For example; lobby to the Coordinating Minister of Marine Affairs of Indonesia during the era of Dr. Rizal Ramly as well as the lobby to Presidential Advisory Board (WANTIMPRES) for the President Ir. Joko Widodo regarding exploitation of oil and gas mining, Masela Block, resulted in the Presidential decision (announcement) that the exploitation of Masela Mining Block to be executed as an On Shore Exploitation and not Off-Shore Exploitation. The decision support the demand of Maluku lobbying team and considered to be more beneficial by providing multiplier effects to economic development of local Maluku community [8].

Even though, contribution of national government including certainty in laws and regulations, and politics has an important place in the development efforts, driving the potentials from the inside and implementing development programs directly to the community is the main objective of the development efforts and therefore improvement of human resource's capacity is a key factor in economic development and prosperity of Maluku's community.

Development of Maluku's Higher Education

University of Pattimura as a State Institution and considered the highest quality standard of higher education in the province has to get ready or be prepared to be able to take significant and important roles in finding solutions and not only depend on or accusing central government for the lack of development in education as well as poverty condition suffer by the Maluku community. To be able to improve the position in the grouping of universities in Indonesia the development methods and programs are required to provide exponential effects and not only linear effects as usual, meaning that UNPATTI has to place the target (achievement) higher or outside of the level of group two and group one universities in Indonesia. Otherwise, it will always be at the same (lower) level of quality.

Such efforts, to some extent, were implemented during the years 1980-s [9] [10]. Among the programs implemented are (1) formulation of "Main Scientific Pattern" of the University, "Bina Mulia Kelautan" (To Build Noble Marine), which provide a specification (branding) to the implementation of *Tri-Dharma* (thee main Tasks) of a higher education institution; Scientific teaching, researching and extension services, offering a unique aspect to other institutions to collaborate (2) implementing a policy of "cross breeding" in acquiring teaching staffs through introduction of teaching staffs graduated from other universities such as IPB, UNHAS, USU, UNIBRAW and others. The policy will avoid "inbreeding depression" or reduction in teaching quality when the staffs are solely acquired from the UNPATTI graduates (3) promoting and strengthening basic sciences by providing short courses to academic staffs collaborated with CIDA and Universities such as IPB and UGM (4) improving teaching infrastructures such as laboratories and other technical implementing units (5) encouraging selected staffs to earn higher degree (master, doctor degree) from foreign universities such as United States of America (USA), Canada, Germany, England, Australia, Netherlands, Belgium, Russia and others.

The programs described above deemed to be successfully implemented. However, in later development, the results seemed not to provide a highly significant implication to further development of UNPATTI. Pertaining to scholars graduated from foreign countries, a number

of reasons may be indicated; some of the scholars found better job positions abroad and stay in the countries where the study was completed. Some others returned to Indonesia (Maluku) to implement their special achievements at the Pattimura University but discovered that the status of job positions and promotions were not clear and find alternative institutions to continue their services. The rest continued their services at UNPATTI but the facilities and the Institution can not provide a good environment for the implementation of the high scientific accomplishment they achieved, as if superior genes ready to contribute in developing new superior varieties through breeding programs, however, fall into in-supportive genetic background or in other words, did not find a happy home to express their superiority.

To be more specific, scholars fall into the described groups may be exemplified as follow; those who were not returned to Indonesia, Dr. Martin Nanere (MSc. Canada, PhD Australia- Stay in Australia), Dr. Justy Siwabessy (MSc., PhD. Australia, stay in Australia), Dr. Minggus Yawalatta (MSc., PhD. Canada, stay in Canada); the scholars who returned to Indonesia but continued thir services in other institutions, Dr. Venska Rajawane (MSc. Japan, PhD. Canada), Dr. Tony Wagey (MSc., PhD. Canada), Dr. Non Norimarna (MSc. Canada, PhD. Australia) and those fall into the third group, Dr. Gino S. Limon (MSc. Canada, PhD. Germany), Dr. Robby Hetharia (MSc. Canada, PhD. Belgium), Dr. Semuel Littik (MSc. Canada, PhD. Australia), Dr. Simon Raharjo (PhD. Canada), Dr. Audrey Leatemia (MSc., PhD., Canada), Dr. Adelina Siregar (MSc. Canada, PhD. Germany), Dr. Wardis Girsang (MSc., PhD., Australia), Dr. Eugene Renyaan (MSc. Denemark, PhD., Germany), Dr. Alex Retraubun (MSc., PhD., Great Britain), the author (MSc. Canada, PhD. Germany) and others.

Leadership

Leadership is an important, determined factors in the development of the institution. In many cases, however, the Personal characters of a leader such as visioned, integrity, ethical which should be placed at higher position in selection criteria, compromised with the terms acceptability, capability, *bibit* (genetic lineage), *bebet* (social status, wealth), *bobot* (education, achievements) which mainly refers to aligning the will of all parties as well as the family relationships, mainly practice in political elections. In leadership election, the procedure is usually correct. The activities, however, are partly twisted resulting in the outcome of leaders which are lacking efforts to promote the development of the institution in terms of academic or scientific improvement including strengthening laboratories and other technical units, periodically upgrading the curriculum and staffs sustainably, habits of presenting scientific speech, seminars, webinars, research and publications, scientific collaborations, reporting implementation of visions presented at the time of election and others. Promoting and awarding professorship frequently is generally beneficial for the institution, the Pattimura University. However, at the quality level of Eastern Indonesia (Group-3), there is a need for an extra ordinary achievements, not only meeting the requirement of formal documents. There have been cases where critical opinions of professors are demanded in the current poverty situation of Maluku. Professors hold the highest rank of scientific authority, their views will be taken seriously, influencing policy and educating community. Additionally, rewarding professors require higher budget from the institutions for their services. It is therefore, necessary to reward well informed, diligent and productive staffs. Continuous preparation of new candidates and implementation of democratic elections will hopefully produce leaderships with better quality to lead Pattimura University, the best university in the province, to play

higher significant roles in educational development and improvement of prosperity of Maluku people in the context of Unitary States of the Republic of Indonesia (NKRI).

Educational Development in the Small Islands of Maluku

Prof. Jan L. Nanere, a former Rector of the Pattimura University, in a presentation, proposed the establishment of community college in every regency in Maluku to prepare young generation to be able to respond quickly, practically and properly to local or regional challenges encountered [11], The proposal has been implemented, to some extant, and serve its purposes within the region.

Aside of regular and continuous development of the institution in improving the infra-structure and facilities at every level of coordination (University, Faculty, Department, Study Program), specific cases such as that of visiting scientists from the Neterlands has been able to accelerate the improvement of plant breeding and genetic teaching at the Faculty of Agriculture Pattimura University, enriching literature collection, voicing and assisting conservation of old and valuable library/litterateurs of renown scientist such as George Eberhart Rumphius. [10]

Later in the development, Pattimura University through its program, sent teaching staffs to a number of schools in regions of remote islands to provide their contribution in improving the human capacity, surely with certain financial support for air, sea and land transportation, accommodation and other expenses. Through the implementation of program “Merdeka Belajar Kampus Merdeka- MBKM” (Free Learning, Campus Free), Ministry of Education, Culture, and Research and Technology of Indonesia, students from the Pattimura University were allowed to teach at schools as a way of completing their final assignment at the university before graduation.

In addition to conventional, face to face, learning method, the Ministry of Education, Culture and Research and Technology, through MBKM concept, has also introduced the blended (mixed) learning method by adding online learning method on to the face to face learning method in the educational system in Indonesia [12].

Pattimura University thorough a collaboration of Indonesia-Netherlands, during 3-4 years implementation, has been the first in Indonesia to successfully implementing a project “ Setting Up A blended Learning Program for Sustainable Inclusive Agricultural Value Chain Development in Indonesia" (*Blended learning - Value Chain - BLVC*) [13] [14]. Through the project, students at four departments at the Faculty of Agriculture, Pattimura University; Post Harvest, Plant Culture, Agribusiness, and Animal Husbandry received lectures directly from competent experts at a number of institutions from certain locations; Maastricht School of Management- MSM (from Maastricht and The Hague, Netherlands), Agrofair Company (from Barendrect, Netherlands), Bogor Agriculture University (from Bogor, Indonesia), Pattimura University (face to face at Ambon, Maluku). Through assistances of a number of staffs at the Pattimura University as supervisors for research and practical works, the blended leaning method proved to produce a number of graduates out of syllabus and teaching team of International quality with a very little financial support.

The use of blended learning method coupled with international collaborations will propel

educational quality of the Pattimura University. The use of Blended Learning method is highly suitable for remote islands situation through direct participation of highly competent teaching staffs at the Pattimura University.

A number of requirements for blended learning system to be established for remote islands include internet connection especially wireless networking Technology or wireless Fidelity (WIFI), online platform such as Zoom or Webex, google classroom and others and possibly translators in case of international collaborations and others.

Developing a Sustainable Economy and Prosperity of the Islands

A few big ideas or concepts have been proposed to develop and improve the economy and prosperity of Maluku community. Most of them, however, have not been successfully implemented. One of the examples is the idea of Maluku to be "National Fish Storage" (Lumbung Ikan Nasional-LIN). On one hand, the concept (and others) is mainly a proposal to the government (National and Provincial) and basically has not been given detailed, technical elaborations or the complete road map for the implementation and as a result ignored in serious discussions at the ministry level of related department, even though, the concept has been discussed in public hearing webinar and been given a number of inputs by different parties within Maluku community. On the other hand, as observed during debate or meetings of Indonesian parliament (Dewan Perwakilan Rakyat-DPR-RI) and related executive government (Ministry), the preference of certain Ministry which is in-supportive to the demand of Maluku Province/community by indicating the lack budget and other reasons, even-though the programs have been a pledge by the President (Ir. Joko Widodo) to Maluku community during a presidential visit to Maluku.

In recent development, Pattimura University, through a statement of the Rector, Prof. Fredy Leiwakabessy, will prepare a concept of developing Maluku in the form of island cluster (gugus pulau) to be submitted to the provincial government [15]. The statement is surely a sign of a great future contribution and collaboration, and Maluku's community awaits a concept that is relevant to state of the art of islands development.

The notion of developing Maluku as island cluster has been discussed and agreed upon since 1980s to 1990s; 12 island clusters of Maluku now fall into 11 Regency/Municipality are grouped due to geographical closeness, aggro-climatic zones, cultural similarity, language/dialect similarity, geographical distance from the central power of the province/span of commands, kind and diversity of vegetation, trading commodities (superior commodities and reliable commodities), and others.

Economic development and prosperity of Maluku people is not only about exploiting natural resources and increasing income rather sustainability of the resources, environment, treatment to the indigenous community and the profit produce through development.

if the development is inclusive, involving local community, government, researchers, business enterprises, and press as in penta-helix manner? is another question to be observed in the development concept proposed. Inclusive collaboration is not only ensure effectiveness and efficiency of development in general but also efficiency in budgeting, supporting

implementation of the University's Tri-Dharma (Three Tasks/services) in the status of Pattimura Univeristy as Public Service Institution (Badan Layanan Umum-BLU).

Other important issues related to climate change and its impacts such as alteration of planting dates, copping systems, *El Nino* and *La Nina* (extreme weather resulted in draught, flood, forest burning, etc.), environmental degradation, depletion of biodiversity on the islands region having small buffer zone, the use of recent technologies including artificial intelligent (AI), WIFI, etc., good agricultural practices (GAP) including organic farming and others.

Learning From Small Islands Developing States (SIDS)

Although part of the Unitary States of the Republic of Indonesia (NKRI), Maluku geographically composed of small and medium islands, in which strategy and impact of development will be similar to other islands of the similar size anywhere in the world. The similarity required Maluku to learn from other countries and islands in the world.

Small Island Developing Nations (SIDS) a group of small island states in the world was recognized in the United Nations (UN) Conference on Development and Environment held in Rio de Jenairo, Brazil, 1992 as a special case due to their environmental condition and development. In the list of SIDS member, aside of 39 UN island states, part of them are Island states in Pacific Ocean, Central America, two neighbouring countries of Indonesia; Singapore and Timor Leste, there are also 18 Associate Members of UN Regional Commissions including islands which are regions of other countries such as US Samoa, British Virgin Islands, French Polynesia [16].

Maluku province as an autonomic region of NKRI may pursue to take part in SIDS group in order to exchange information in various regular meetings, utilizing research findings and development concepts which taking into account geographical strictness such as separation from main market, vulnerability to environmental change including climate, scarcity of resources, small buffer zone and others.

Collaborations in Development of Agricultural Potentials and Micro-Small-Medium Business Enterprises in Maluku

International collaborations since 1980-s have up graded the quality and provided a good name for the Pattimura University; enabling scientists to recognize and understand the potential genetic diversity and prospect of numbers of food and industrial commodities as well as gathering the knowledge to be the basis of further development.

Collaboration between Pattimura University and the United States Agency for International Development (USAID) on the project, "Underexploited Tuberous Project Yams and Aroids" have enabled the mapping of tuber crops especially yams (Dioscorea spp.), taro (Colocasia spp.) and coco yams (Xanthosoma spp.) in tems of number of varieties, regions of genetic diversity and area of cultivation in Maluku Islands. More than 120 cultivars mostly dioscorea collected from the islands of Yamdena (Tanimbar), Seram, Saparua, Ambon, Kei supporting food security of the islands, albeit at the status of underdeveloped or never been studied and used further. Field experiments conducted during the project duration have enabled determination of improved cultivation techniques than that of traditionally implemented such as land requirement and

planting field preparation, kind and dose of fertilizers, seeds (part and size of tuber, and the placement on the planting holes), method and height of staking etc., ready to be taught back to farmers in the extension service activities [17] [18]. There is a need for further studies and use of the germpalsm potential, including conservation efforts to preserve genetic diversity for future development [19] [20].

Research and extension service activities accompanying a work visit of a regional parliament member followed by collaboration on scientific publication with the University of British Columbia, Canada successfully reported the potential and status of different germpalsm supporting food security in small islands of Kisar, Leti, Moa and Lakor including corn, beans, jack fruits etc. [21], which also under the pressure of genetic erosion and needed to be conserved for future use.

Sago (*Metroxylon sagu Rottbol*.) is an important food crop sucuring food suply of Maluku islands community for centuries. Recent natural stands reported to be about 36 thousands ha, declined from 60 thousands ha reported a few years ago , althorugh still rank three in indonesia behind Papua and Riau [22] [23]. Five different species have been extensively described eventhough studies indicated that sago is originally developed out of one species, *Metroxylon sagu* Rottb. with diocious characteristic [23] [24].

Collaboration between Pattimura University and Bank of Indonesia Maluku Branch was able to promote sago product in the form of instant gel (papeda Instan) in attepmts to produce a practically marketable product, able to reach wider consumers. Although the project is still to be followed up further, it also raised the awareness of conserving natural stands along the stream of development of sago [25].

Joint work of Unpatti - Netherlands through a project called LTA72 successfully mapping detailed agroclimatic zones of Maluku, other than the general reference, Oledeman and Las (1980) [26], enabling determination of planting date and cropping system in more detaile in Maluku region. Efforts iniciated by Prof. Sitaniapessy of the Pattimura University, an expert in agricutural climatology to establish planting season and cropping system in diieferent regencies of maluku [11] through research collaboration using data of meteorology stations in maluku may be supported by the climatic mapping of LTA72 project. This effort is hoped to be carried out further and realized in the future.

A joint work of Pattimura University-Biobased Research Wageningen University and Research - Agrofair Research, Netherlands on genetic diversity of banana commodity in Maluku Islands revealed that more than 17 genotypes of banana are traded dayly mostly at the traditional markets of Ambon (Maluku) [27] [28] [29]. Indonesia as the center of origin of banana [30] store a huge number of about one thousand varieties distributed in the world. Maluku specifically situated in the region of banana triangle, a habitat of a great number of endemic and unique species (cultivars) aside of the high genetic diversity [27] [31].

The visit of Wageningen University and Research togather with a multinational company (Agrofair Company) involved in international trading of cavendis banana specifically from Latain America to the wolrds market of europe, America etc., signaling the importance of

banana in Maluku region in effords to study and selecting possible genotypes banana of Maluku and their products to find their market niches in the international trading.

In the history of banana world export and import, Yellow Ambon banana (Pisang Ambon Kuning) well known as Gross Michele (*Musa acuminata* Colla) was the only genotype traded internationally since the year 1850-s. in the development, gross michele was attacked by a desease known as panama desease or fusarium wilt caused by a fungi *Fusarium oxysporum* Tropical Race-2 or TR-2, causing the genotype to be taken out of or dissapeared from the wolrd market of banana after about 100 years of world's market domination. The gross michele was than replaced by cavendish banana, a genotype resistant to *Fusarium oxysporium* Race-2 around the year 1959 [32]

In recent development, the fungi, *Fusarium oxysporum* is mutated and produce a new Race, Tropical Race four, TR-4 which is threatening to wipe out cavendish banana from international market due to its susseptability to the new race [33]. Banana scientists are persuing two ways of approaching the problem in banana international trading; first seeking resistant genotipes (genes) and implemented the genes in developing new varieties of cavendish banana resistant to TR-4, both through convensional breeding and/or biotechnology (Geneticly Modified Organisms-GMO) and second, seeking new genotipes or species suitable for international trading. Each of the two solutions bears certain chalenges.

During the research period in Ambon, a research team member, Managing Director of Agrofair Company was interested in a specific species (genotype) of banana, Sky-Hold Banana (Pisang Tongkat Langit) (*Musa troglodytarum* L.) and intended to search further, possibility to develop the species further for international trading [34] [35]. Sky-hold banana posses a yellow/red/orange skin and flesh colour indicating a high content of beta-carotene which is a precursor of vitamine-A, evaluated to be higher than a number of horticultural product generally indentified to contain high vitamine A [35].

At the observation of the author and delegate members of UNPATTI during a visit to laboratory of Agrofair company, Barendrecht, Netherlands, products of horticultural crops including cavendish banana, manggos and others in the form of porridge in different packaging system have been commonly traded in markets (super markets) of european countries indicating that there is a high possibility for sky-hold banana products to reach international market. This market niche can be captured by Maluku with certain hard works including establishing and improving collaborations with existing partners, preparing cultivated lands and implementing good agricultural practices (GAP)-organic cultivation, determining the best harvest time for highest beta-carotene content, establishing factory for porridge, powder, cracker production and others in order to prolonged the shelf-life and/or act as mixture of other products (such as smoothies) and other uses [36] [37].

In international trading especially in developed countries (Europe etc.), trading agreement such as Fair Tade, generally required a high quality products and are strickly evaluated with a fair selling price and profitable to farmers and farmers association. For example, marketing of cavendish banana in Ecuador conducted by Assoguabo Company, situated in the Village Elguabo, implementing rigorous evaluation and certification along the value chain system of

cavendish banana; evaluation for organic and GAP at the field cultivation stage, internal and external inspections on phisical and non-phisical quality of the product following harvest, inspections at the stage of packaging and peletting, land and sea tranportations facilitated with equipments which maintaing the quality during transportations, up to the ware house of receiving company and delevering to retailers (super markets) as well as allowing possibility to trace the product back to individual producer (farmer) in case of problems in product quality. The price offered on the fair traid agreement, in additon to benefiting the farmers individually, farmers association is awarded with one USD per box of banana products. In one year international trading, it is noted that one million boxes were exported into europen market under fair trade agreement, whic means that one milllon USD of the traded banana belongs to farmers association to be managed indipendently. The money generally used in training of the farmers, providing scholarship to the students, building shools and other programs for the prosperity of the members.

As described previously, the main task of Indonesia-Netherlands collaborations through Blended Learning and Value Chain Project (BLVC) was the leaning of agricultural Value Chain System through Blended Learning method. Five different commodities of high potential value to Maluku were the center of the attention on learning process; clove, nutmeg, coconut, banana, and sago selected based on the significance on hystory of Maluku's development, role in food security and economic development, improvement in technology implemented and business (small and medium) enterprices, coveraged area of importance and others. Nutmeg (*Myrisrtica fragrans* Houtt.) is appealing to be discussed also to examplified the development of a global value chain characterising inclusiveness and sustainability in addition to the facts that Maluku is its place of origination and center of genetic diversity, and its historical significance in the world spice trading and development of Maluku and Indonesia.

In recent decades, a number of small and medium family business enterprises dealing with nutmeg development have been established and operated in Maluku with global scale. The businesses include PT Ollop (lately cease to operative), Kamboti Maluku Heritage or Kambboti Maluku Spice and Maenusu. Maluku nutmeg value chain system covers a wide range of stake-holders, not only at national level sucs as nutmeg farmers in different islands (Banda, Ambon, Seram and others), collecting traders of local (village, county, Regency/Municipality), exporting traders including family business enterprises, Government institutions sucs as Department of Micro, Small and medium business (UMKM), Department of Agriculture, Research and Education institutions including institution for the Assessmet of Agricultural Technology (BPTP), Pattimura University, but also international level include Maluku business community in the Netherlands, and a family business enterprice, Verstagen, whcih is one of the biggest importer of nutmeg (spice) products in the world. A number of business advisors as well as attachment students were parts of the nutmeg development system providing advises on certification for GAP [38], post harvest handling of the nutmeg products especially on the management of aflatoxyn contamination, improvement of facilities for export product preparation, besides learning from the nutmeg value chain practices.

Among the chalenges faced in the development of Maluku nutmeg value chain is the high concentartion of aflatoxyn fungi in the seeds and mace products, which exceed the standard quality for european market and as a result Maluku nutmeg export was rejected by european

importer. Following identification of the problems, farmers practices of drying the nutmeg products have been determined as one of the causes. With a serious and hard work in upgrading the drying sistem, it is hoped that Maluku nutmeg products can re-capture European market which promising a fair and profitable price and at the same time ensuring the good branding of high quality nutmeg products from Maluku, Indonesia. Eventhoug in other international markets, a high quality standard of products is not strictly demanded, the profit received and respect for high quality branding of Maluku nutmeg will not be of satisfection.

Another cahalenge faced is the small margin price receive by nutmeg farmers within the trading chain among farmers, local collecting traders, regional collecting traders and exporting traders. Research findings [39] indicated that farmers, due to lack of capital, will sell the nutmeg products through collecting traders with a very low price rather than directly sell the products to exporting traders. Lack of income out of nutmeg farming is discouraging for young generations to take over nutmeg farmings from previous generations and threatened sustainability of nutmeg farming in Maluku.

A memorandum of understanding (MoU) regarding establishment of a platfom called Nutmeg Innovation Platform (NIP) was signed by Maluku Governor (Irjen Pol. Murad Ismail), Rector of the Pattimura University (Prof. Nus Sapteno) and Managing Director of Agrofair Company, Netherlands (Mr. Johannes van der Waal) taken placed following termination of BLVC Project as a way of institusionalizing project's findings and activities. A number of activities under coodination of NIP have been communicated and implemented. Among the activities are whatsAp group (WAG) meetings and sharing ideas, proposal preparations and submittions to funding providers although has not been successful so far. The other is an invitation to platform personals to take part in sharing the experience in a post graduate class of "Nutmeg Innovatoion Challenges" at the *nstitut Mines-Télécom Business School (IMT-BS), France,* where the graduate students proposed a number of communication Technology Solutions in responding to chalenges faced by farmers in the small islands of Maluku [40]. One of the plans to be realized, as discussed during platform's meetings, is to analyze the supply chain (value chain) of nutmeg products and identify infra structures needed to be establsihed, renovated or improved, reporting the findings to related government institutions to be acted upon at the policy and budget of Maluku government. The program aimed to accelerate transfer of nutmeg products from farmers to exporting traders [41] [42].

Another collaboration worth mentioned, though not directly related to business development in Maluku, rather to promote prosperity of community in Ambon city is garbage management in the city of Ambon especially in Ambon bay. Two students of Rotterdam University were placed in Ambon for a periode of time studying the condition and movement of litters around the city and work jointly with municipality government, indonesian institute of science (LIPI), Ambon and Pattimura University, presenting seminars in several isntitutions regarding litter management as well as developing tools to gather the litters in Ambon bay to certain locations or cleaning the litters in Ambon bay.

Maluku Oil and Gas Mining; Masela Block

Mine exploration in Maluku islands until recently found more than 25 oil and gas reservoirs, part of them are being exploited, others have been in agreement with oil companies to be

exploited, including Masela Block [43] [44] which, will be operated in about 4 years to come (2029) according to plan of development (POD) [45].

Following the presentation of Dr. Rizal Ramly, Coordinating Minister of Marine Affairs (2015-2016), attended by academic community at the Pattimura University [46], it is understood that oil and gas exploitation of Masela Block with ist derivative industries established in Maluku islands will definitely impact the economy and prosperity of Maluku community. It is also realized, however, that there will be negative consequences to the islands and the community. A national webinar organized by Archipelago Solidarity Foundation (ARSO) and Pattimura University was held in 2020, gathering opinions of mostly Maluku community in different part of the world, in responding to the situation where Shell company, the company holding the contract for exploitation of Block Masele, moved out from the signed contract [47]. Invited speakers were of mining experts and practicians, deputy of coordinating ministry of marine Affairs, and politicians.

In the role as a mandatory responder in the webinar, the author emphasized several points. First, it is necessary to evaluate the track record of company holding the mining contract regarding its attention on sustainability in aspects of environmet, local and especially indigenous community including employee, and economic profits, not only on its technical ability and experience in mining exploitation. Second, there may be three possible scenarios taking place on the exploitation; firs scenario related to the statement made by Dr. Rizal Ramly; "Maluku can be richer than Qatar". Observing the richnes of Qatar, a country built from the budget obtained from oil mining, it is obvious that Maluku need a paradigm such as that implemented in Qatar. This is the best scenario possible. The second scenario maybe indicated as the worst scenario with the example of oil and gas mining in Nigeria. Oil and gas exploitation in Nigeria has resulted in devastation of agricultural productivity, destructions of environment and biodiversity, land and marine, as well as human health. The causes include leeking of transporting pipelines and gas flarinng as a result corrosion, oil stealing due to poverty, lack of empoyment and desire to be rich quickly with little work [48] [49].

The third scenario may be indicated as the midle schenario with the example of Indonesia. Experience indicated that a number of oil and gas mining in indonesia especially in the eastern part of Indonesia are transported and marketed in other regions without any knowledge or compensation to local, indigenous community. In other cases demonstration of employee demanding increase in wages are punished with job termination, adding to the suffering of local community, the real owner of the mines.

It should also be noted that the oil and gas mines including Masela Block are situated in a region of biodiversity *hot spot,* Wallacea hot spot, one of the 35 only in the world, each stores specific endemic biodiversity components and undergoing cerain level of habitat distructions and therefore requre greater attention in research and conservation efforts. Oil and Gas mines exploitation has to be at most the benefit of people according to indonesian constitution (UUD-45) and specific for Maluku, need to be realized partly as demanded in the lobby of Maluku community leaders [50]. On the top of the demands, there is also need for compensating part of habitat and biodivesity distractions in the region by establisheing an institution for conservation (*in-situ, ex-situ, inter-situ* systems), education, research and development on

biodiversity in the region for the prosperity of Maluku, Indonesia.

CONCLUSION

The fact that Maluku Province, rich in natural resources including biodiversity and mines, has not been well benefit from the development of Indonesia or left behind in the national development, require a great effort from Maluku community to change their fate for the future. Internal approach of development should be iniciated by improvement in education system and institution utilizing recent technological development, inclusive collaboration in *penta-helix* manner at the scale of local, national and international, implementing findings of the studies sustainably. Development by way of exploiting minerals, oil and gas resources needs to be implemented by taking into account the impact on sustainability of environment, local community and benefit for all stakeholders, and as a result the development efforts either through central government, local government or community of Maluku will propel Maluku Province up to a better position in the scale of poverty level in Indonesia.

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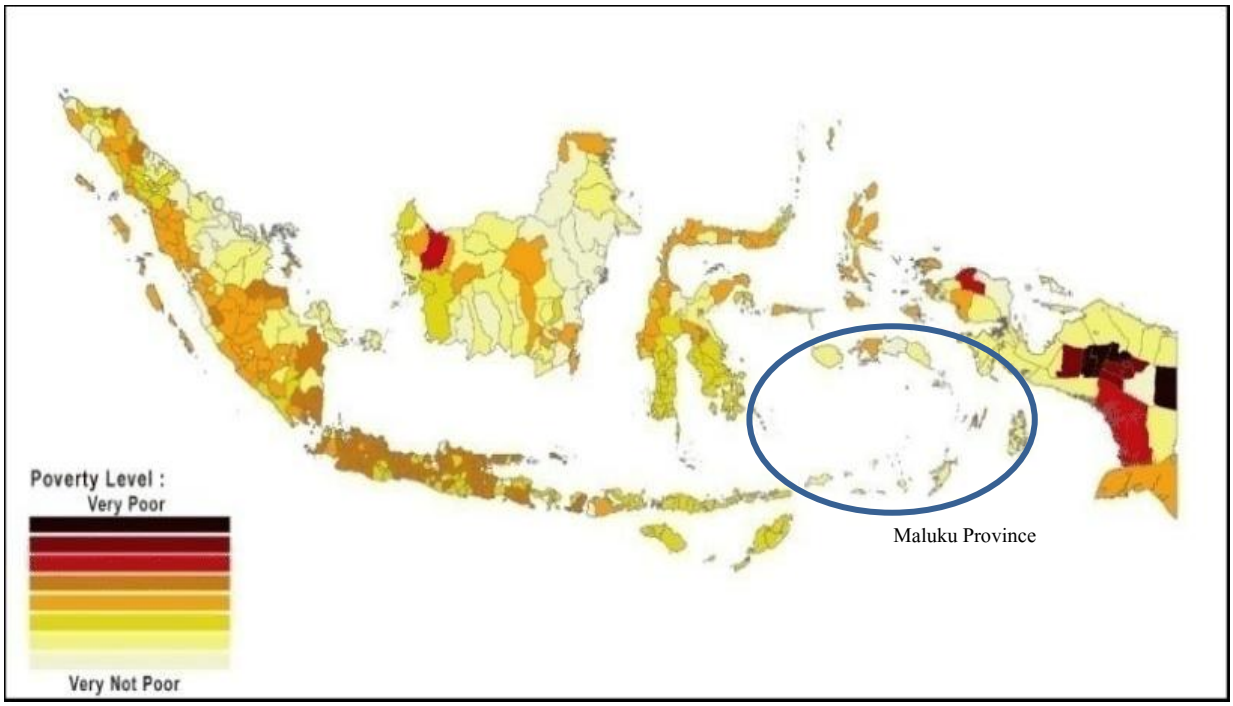

Figure 1: Map of Indonesia based on poverty level [3].Maluku Province observed to fall into orange to yellow to white groups indicating that the province is within poor to not very poor category, much better than other provinces (places) in Indonesia.