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# Toward green economic growth in South Sumatra: collaborative platform through a knowledge management approach

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**Abstract.** In the world where natural resources are already limited, balancing the environmental aspect with economic growth has become necessary. Otherwise the consequences will be severe. The Green Growth Masterplan of South Sumatra has outline the strategies and action toward achieving sustainability. The masterplan consist of seven strategies aimed at achieving 5 sustainable development goals: (1) sustainable economic growth; (2) inclusive and equitable growth; (3) socio, economic and environmental resilience; (4) healthy and productive ecosystem, and (5) greenhouse gas emission reduction. The masterplan also implied that the only way South Sumatra will be able to achieve the green economic growth is through collaboration and cooperation among all stakeholders in the province. All of the enabling condition in green growth strategy were pointed toward the importance to build a strong partnership with all stakeholders. They need to work together and combine their knowledge and resources to achieve the green growth vision. One of the enabling condition is a strengthened capacity to conduct and implement green growth action. At this point, the issues of knowledge management became important. In order to collaborate effectively in managing the South Sumatra Landscape, a strong basis of knowledge is required. A knowledge society need to be formed in South Sumatra for this purpose. This knowledges need to be manage in such a way that any stakeholders in South Sumatra will be able access, utilize and improve. The SECI (Socialize-Externalize-Combine-Internalize) framework of Nonaka and Takeuchi (1995), fit nicely into the context of South Sumatra green growth implementation. Tacit knowledge from local wisdom of community needs to be combined with explicit knowledge that has been produced by so many research project in South Sumatra. The only problem with SECI framework is in institutionalization of the framework itself. Knowledge sharing on sustainable development needs to be facilitated by a body who can work with multiple stakeholders and at the same time implement the knowledge management system. In South Sumatra, this was addressed through the Green Growth Partnership Institution. KOLEGA SUMSEL is a form knowledge society which strive to achieve green growth vision through cooperation and collaboration. The cooperation models itself is an important contribution from South Sumatra to the development practitioners in other places.

## 1. Introduction

One of the main consequences of economic development that relies on land-based commodities is the increasing demand for land. Land is needed in various fronts – from plantation expansion, plantation forest extension, mining extraction, to infrastructure and industrial zone development. Uncontrolled expansion has serious environmental impacts, which could damage the economy and livelihood of the



people in a landscape. These needs will continue to grow as an area develops and as economic growth target becomes more ambitious. On the other hand, it is important to understand that land and landscape were constituted of limited natural resource. The term “land”, indicates a sense of belonging. Yet the suffix “-scape” means, in many languages, to “shape.” Thus the term “landscape,” in the etymological sense, suggests that environments are inherently influenced by man and our activities. We are, in reality, living in the epoch of the “landscape of man,” and in many significant senses we can apply this terminology to anywhere, and any place, in the global milieu. Geoffrey Jellicoe defined the “landscape of man” as an “environment that has been shaped and managed by human activity.” Economic Development. It is about giving people what they want without compromising quality of life, especially in the developing world. Sustainable landscape is about three aspect: (1) social development to ensure that people's health and wellness is strongly protected. It is also about maintaining access to basic resources without compromising the quality of life; (2) environmental protection of ecosystems, air quality, integrity and sustainability of resources. Managing landscape sustainably in reality is a big challenge. Land is central because of its multiple roles as resources and as ecosystem service providers. Matching land requirement for diverse uses by multiple stakeholders with limited land availability by biophysical, socio-economical and policy factors is crucial to gain sustainable growth from land-based sectors. Integrated development and land use planning in this case is crucial to filter out unsustainable development and spatial plans, it can also advise a cost-effective programs and investment toward sustainable development processes.

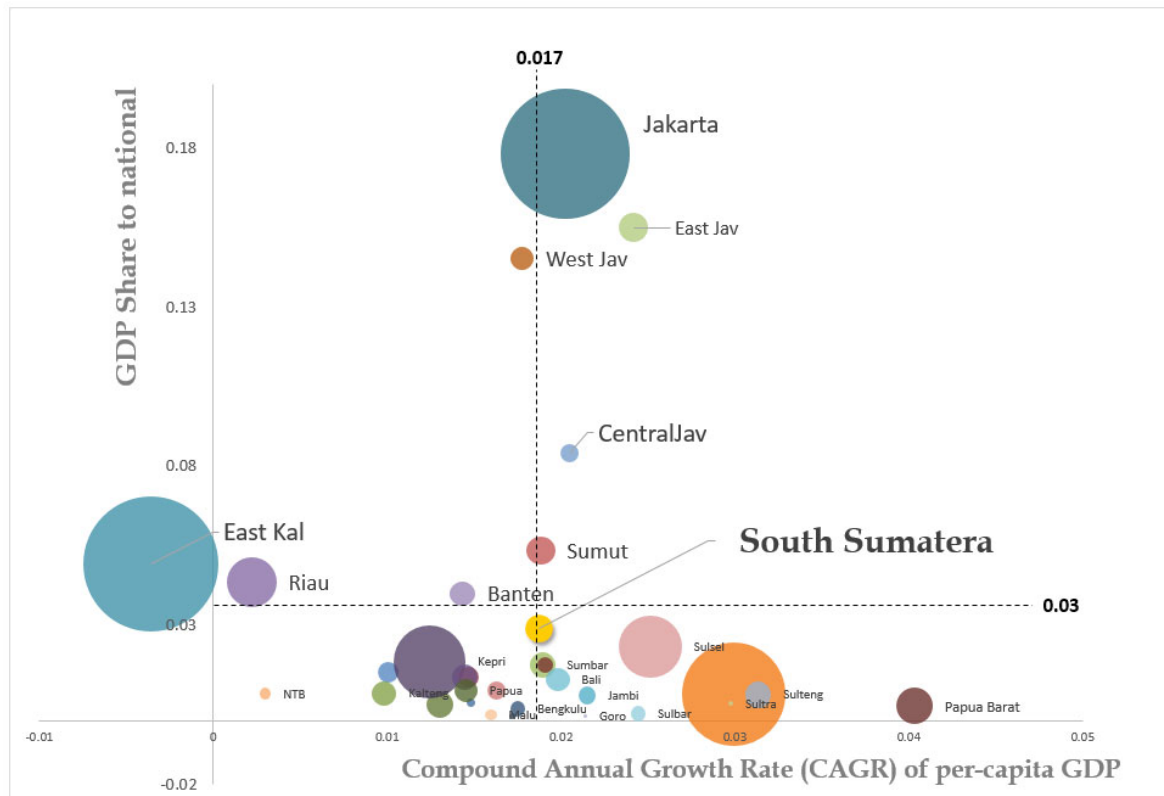
South Sumatra is one of the leading regions in Indonesia in terms of land resources. It is the: 1) fourth wealthiest province in terms of natural resources with high contribution of land-based sectors to the Regional GDP; 2) largest domestic producer of rubber and coffee; 3) fourth province with the largest oil palm coverage nation-wide; 4) province with fairly high number of agricultural, plantation, and forestry households. However managing the landscape of South Sumatra is not an easy task. Balancing the environmental aspect with economic growth has become necessary. Otherwise the consequences will be severe. The forest and land fire disaster in 2015 was a proof that an integrative development plan toward sustainability must be produced. It was at this stage that South Sumatra begin the ambition of a green economic growth. With a strong leadership and support from various development partners, South Sumatra has been able to produce a concise Green Growth Masterplan. However implementing the plan is the next challenge.

The Green Growth Masterplan has outline the strategies and action toward sustainability. The masterplan also implied that the only way South Sumatra will be able to achieve the green economic growth is through collaboration and cooperation among all stakeholders in the province. One of the enabling condition is a strengthened capacity to conduct and implement green growth action. At this point, the issues of knowledge management became important. In order to collaborate effectively in managing the South Sumatra Landscape, a strong basis of knowledge is required. This knowledges need to be manage in such a way that any stakeholders in South Sumatra will be able access, utilize and improve. This paper argue that a knowledge management is one of the key factor for the implementation of green economic growth in South Sumatra. A recommendation of a knowledge management framework developed through a collaborative platform is presented based on years of experience and lesson learnt in managing multiple stakeholder dialogue and activities.

## **2. The Green Growth Masterplan of South Sumatra**

South Sumatra is one of the top 10 provinces with the highest provincial economic growth measured from its growth of Regional GDP per capita. 2013 data of Central Bureau of Statistics, Indonesia (BPS) (Figure 1) shows that the average growth rate of Regional GDP per capita in South Sumatra in the last 14 years is 2.6%. This growth rate is higher than the national average growth rate of Regional GDP per capita in the same period of 1.7%. It also places South Sumatra in the 9th position in terms of annual growth rate of Regional GDP per capita. However, the size of South Sumatra regional GDP per capita is still below national average when measured from its proportion to total regional GDP of 34 provinces in the last 14 years. Although it does not suggest an underperformance of development process, it does show that South

Sumatra has the opportunity to grow more rapidly and with higher regional GDP per capital growth rate. All of this happened with a cost. Various negative impacts of unsustainable land and forest exploitation practices has been occurred. We have seen incidents such as fire, flood, decrease in water river discharge and water quality, and loss of natural habitat in quantity and quality of various animal and plant species.



**Figure 1.** Regional GDP per capita growth and contribution in South Sumatra, last 14 years period

South Sumatra Green Growth is a homegrown initiative that emphasizes on distinct local characteristics. It is in line with the national initiative of the Nawa Cita and partakes in the Nationally Determined Contribution (NDC) as well as Sustainable Development Goals (SDGs). South Sumatra is endowed with enormous capital to obtain green growth, namely: (i) leadership and commitment to global and national community; (ii) favorable business climate – investment by and partnership with private sectors in palm industry and industrial plantation forest (HTI – *Hutan Tanaman Industri*); (iii) agricultural communities that still practice local wisdom and are equipped with the technical knowledge on land cultivation and in participating in economic activities; (iv) land, forest, and mineral resources; (v) infrastructure; and (vi) strategic geographical location. This initiative, led by the Provincial Government of South Sumatra and supported by many civil society organization and development partners, has produce a Masterplan for Green Economic Growth of Renewable Resources in South Sumatra. The masterplan were then formalized through a Governor Regulation in 2017. The masterplan outlined 7 strategy to achieve the green economic growth target [1]:

### 2.1. Sustainable allocation and land-use planning that addresses the gap between land demand and supply

A range of interests from local, regional and global level converge into land requirement. However, due to a variety of limiting factors, not all land requirement can be entirely met by available, suitable land in the desired location. Therefore, alignment and prioritization process between requirement and availability are very crucial in attaining fair, effective and sustainable landscape. The first strategy essentially

elaborates and sharpens South Sumatra Province Spatial Land Planning (RTRWP) and thereby able to indicate the locations for the implementation of the other six strategies. This strategy seeks to balance demand and needs for land whilst maintaining or improving environmental quality. Expansion is possible in certain, appropriate areas with low environmental impacts. Protected areas have to be monitored to avoid environmental damage and GHG emission increase.

### *2.2. Improve people's access to livelihood capital*

Livelihood capitals embrace five aspects: natural, physical, financial, social and human. Some of these capitals are locally-specific, e.g., natural and human capitals, and some are closely interlinked with external factors, e.g., investment, regional network. Without adequate access to the five capitals, some community groups are being left out without sufficient capacity to participate in Green Growth activities such that equality and resilience will not be achieved.

### *2.3. Increase productivity and diversification*

Productivity and land management practices are to a large extent dependent on technology adoption locally and produce products that are consumed locally or exported outside of the province. Once suitable land is scarce, increased productivity and multiple benefit per unit area are options to meet the target of economic growth without further expansion and land conversion, and therefore do not inflict negative impacts on environment. Diversification can also increase resilience when farmers have to face price fluctuations and seasonal changes.

### *2.4. Improve value chain by ensuring fair distribution of benefits*

Through improved value chain of agricultural products, estate crops and forest commodities produced in the landscape, South Sumatra embraces a tele-connectivity with global communities. Regions within South Sumatra, within Sumatra, within the national border and among countries are connected through trade flows of raw and processed products, labour flow, information flow, etc. Connectivity creates an economy of scale that will accelerate economic growth resilience

### *2.5. Connectivity improvement and economy of scale*

Connectivity is the ability of an area to connect with other areas in South Sumatra and outside South Sumatra, and even with other countries, for trade, employment, and raw and processed product distribution. Connectivity improvement will induce economy of scale, boosting economic growth and ensuring economic security through regional GDP improvement and economic equality. With the presence of downstream industry, resilience to the volatility of raw material prices will also be built.

### *2.6. Degraded land and forest restoration*

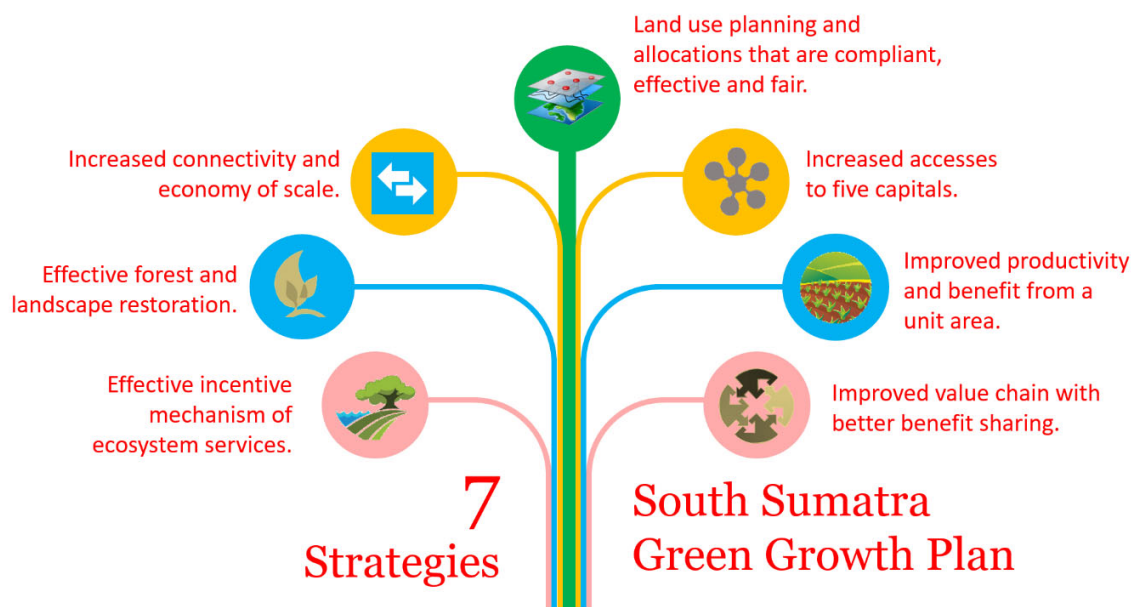
Land and forest restoration, or Strategy 6, seeks to restore certain functions allocated for certain areas, which have been degraded over time. This strategy is not limited to restoring the most pristine ecological condition of natural forest, but also to revitalize livelihood. Restoration has the potential to contribute to improved land availability to meet demands for land. Furthermore, land function restoration will improve environmental resilience. The considerably ambitious targets of restoration were agreed upon by the international community in the Bonn Challenge and one of the financing mechanisms is the Tropical Landscapes Bond.

### *2.7. Incentive scheme for provision of Environmental services and innovative financing of sustainable commodities*

Environmental service incentives/disincentives have enormous potential to support the achievement of green economic growth and greenhouse gas emission reductions, ensure resilience and maintain the quality of the environment in providing environmental services. The concept of payments for environmental services (PES) is regulated in Law 23/2009, but is restricted in its implementation. Likewise, the global program that incentivizes greenhouse gas emission reductions called REDD+ is not

actively implemented yet. The seventh strategy represents South Sumatra's innovative strategy given that incentive mechanism for environmental services is yet to be widely embraced and implemented. This strategy aims to reduce GHG emission and to maintain ecosystem services quality.

The South Sumatra Provincial Government 2017 masterplans explained that Strategy 1 aims to avoid the conversion of almost 150,000 hectares of natural forests, designate land plots for the poor through agrarian reform, establish partnerships in industrial plantation zones within industrial timber plantation concessions, promote moratorium on licensing for peatlands, promote planting crops on suitable land, promote restoration and reclamation. Through interventions under Strategy 2, "Improvement of people's access to livelihood capital", social forestry optimization, land certification facilitation, agricultural and forestry institutional strengthening, conflict resolution improvement, efficient and effective agricultural extension, and energy self-sufficient village development will be promoted. Strategy 3, "Productivity and diversification improvement" features low emission, integrated rice farming, traditional farming practice reduction, the adoption of good agricultural practices and farming method diversification on coffee and rubber plantations, quality palm oil farming intensification, the promotion of partnerships in planting crops for livelihoods in industrial timber plantations as its interventions.



**Figure 2.** The green growth strategies of South Sumatra (South Sumatra Provincial Government, 2017)

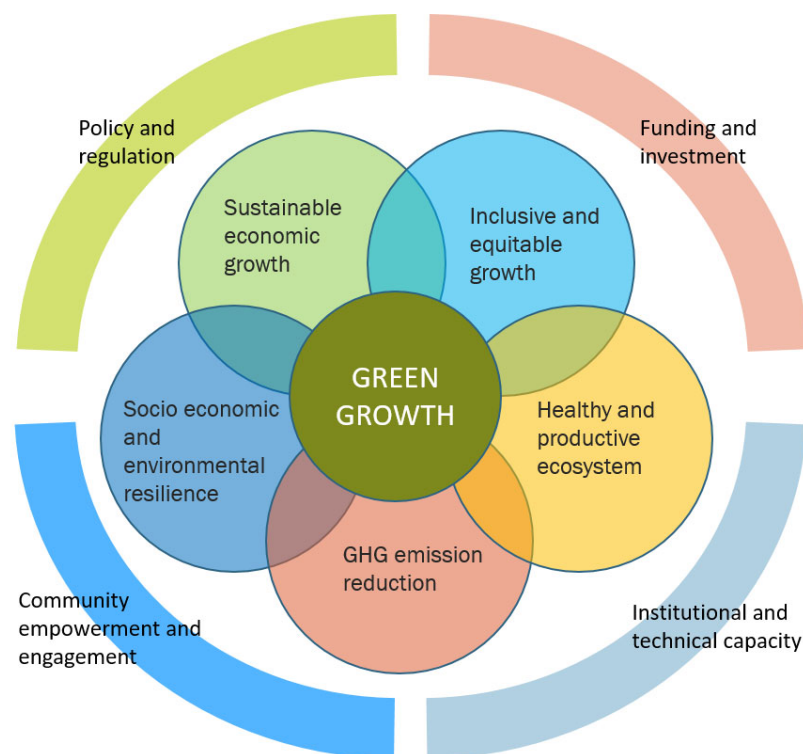
Strategy 4, "Sustainable value chains with equal benefit sharing", focuses on downstream coffee industry development, the improvement of the quality and quantity of rubber auction markets, the establishment of processed rubber product businesses in partnerships, and the construction of mini palm oil mills managed by smallholders as its interventions. Under Strategy 5, "Connectivity and economic scale improvement", interventions will be focused on the development of transportation networks, processing facilities, markets and other necessary downstream facilities including workers and electricity. Strategy 6, "Degraded land and forest restoration", involves financing, policy and partnership interventions that support restoration programs, land restoration using agroforestry (i.e. local coffee and rubber), accelerated planting in industrial timber plantations' primary crop zones, the intensification of crops for livelihoods zone rehabilitation (replanting), natural succession in areas with High Conservation Value (HCV) and High Carbon Stock (HCS), the rehabilitation of degraded areas with HCV and HCS,



and peatland restoration. Strategy 7, which is the last strategy, on “Incentives for ecosystem services and the innovative funding of sustainable commodities”, involves landscape certification and payments for ecosystem services for watershed and biodiversity governance including the creation of the enabling conditions, compensated water commodity markets, ecotourism markets with different alternative destinations, the voluntary carbon mechanism, payments for ecosystem services to shift traditional farming methods towards agroforestry, coffee certification development, Indonesia Sustainable Palm Oil (ISPO) and Roundtable Sustainable Palm Oil (RSPO) certification for palm oil companies and smallholders, and internationally-standardized certification for industrial timber plantations as the interventions [1].

### 3. The Importance of a Collaborative Platform

The seven strategy were all aims at achieving 5 targets: (1) sustainable economic growth; (2) inclusive and equitable growth; (3) socio, economic and environmental resilience; (4) healthy and productive ecosystem and (5) greenhouse gas emission reduction. The strategies are translated further into 47 intervention and 210 activities. All related to management of renewable resources in South Sumatra. Roles of key stakeholders were defined clearly to the point that it is clear enough that the implementation of masterplan will require a strong collaboration among key stakeholders in the province. Four elements of enabling condition were identified:



**Figure 3.** Green growth target and enabling condition

#### 3.1. Policy and regulation

Any development plan will never be implemented effectively without a strong basis of policy and regulation. It therefore a key factor for the implementation of green growth strategy to mainstream its element into a formal development plan such as the provincial Medium or Long Term Development Plan. The development plan itself is a very strong policy according to Indonesia Law, as it is related to budget

allocation and key performance indicators of a provincial government. Translating the masterplan into a clear targeted outcomes of provincial development backed up with a concise calculation of required budget is then necessary. The government officials and institutions needs to work together to create this important enabling condition. Other specific regulation are also necessary, such as local regulation on peatland management and one map initiative.

### *3.2. Funding and Investment*

The green growth masterplan, among its interventions, suggested a strong focus on downstream industry development. It is seen as the only way to achieve an improvement of value chain and economic of scale. Thus it will also increase the benefits per hectare area of South Sumatra. All of this required a significant amount of funding and investment as the government budget will not be enough to cover all the cost. Therefore a good collaboration with private sector is necessary. Only through them that the cost of implementing the green growth vision can be achieved. Another important stakeholder is the international funding institution.

### *3.3. Institutional and technical capacity*

Another strong element of enabling condition is the institutional and technical capacity of local government and other relevant stakeholder to carry out a careful planning, monitoring and evaluation of the implementation of green growth strategy. Tools and method will needs to be developed to facilitate the process. In the other hand, human resource development within government institution is necessary. Collaborative effort with the university as well as local and international research institution will be the key to achieve this.

### *3.4. Community empowerment and engagement*

Last but not least is the importance of a strong community support in the implementation of green growth activity. A perfect plan will means nothing if it is rejected and abandoned by the local community. They are the main beneficiary as well the main subject in realizing the green growth vision. The role of civil society organization is crucial in this matter as in most cases they are the closest one with the community in the field.

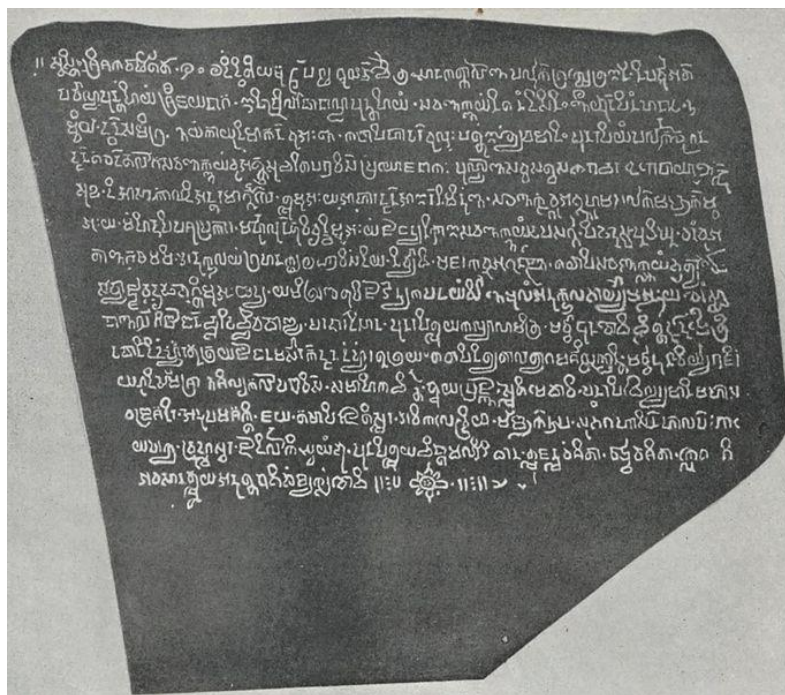
## **4. A Collaborative Knowledge Management Approach**

Knowledge society has been defined by Afgan and Carvalho (2010) as “a human structured organization that is based on contemporary developed knowledge and representing new quality of life support system”. Knowledge is obviously the central pillar of a knowledge society that has access to worldly information and the ability to process that information and transform it into useful knowledge for the improvement of its citizens’ lives [2]. The knowledge society is based on the need for knowledge distribution, access to information and capability to transfer information into knowledge. Knowledge distribution is one of the essential requirements of the knowledge society. It has to be based on equity and non-discrimination, justice and solidarity. It implies understanding of knowledge as the central pillar of the knowledge society. Knowledge is more than information. It requires information processing with the specific aim of obtaining the conceptual understanding of life support systems within a specific cultural system. Today, a knowledge society is a source of human and sustainable development [3]; thus, it is beginning to play a fundamental role in building sustainable societies. Afgan and Carvalho (2010) have also stated that the concept of a knowledge society represents a new paradigm for future development, which is strongly correlated with sustainable development [2]. UNESCO (2005) suggested that by giving knowledge to a society, it can foster the development of a participatory set of development activities, freedom of expression, education and the rights of citizens in the decision-making process in public policies. In turn, this can further strengthen the development process [3].

All of the enabling condition in green growth strategy were pointed toward the importance to build a strong partnership with key stakeholders. They need to work together and combine their knowledge and resources to achieve the green growth vision. A knowledge society need to be formed in South Sumatra for this purpose. The knowledge of implementing a sustainable practices of green development can differentiate as tacit and explicit knowledge. Polanyi (1967) described tacit knowledge as knowing more



than we can tell, or knowing how to do something without thinking about it, like ride a bicycle. This highly personal, subjective form of knowledge is usually informal and can be inferred from the statements of others [4]. Tacit knowledge tends to be local. It is not found in manuals, books, databases or files. Tacit knowledge is technical or cognitive and is made up of mental models, values, beliefs, perceptions, insights and assumptions. Technical tacit knowledge is demonstrated when people master a specific body of knowledge or use skills like those gradually developed by master craftsmen. Within the green growth vision of South Sumatra, tacit knowledge is embedded in local wisdom of South Sumatra people. The oldest evidence of South Sumatra tacit knowledge on sustainable development were embedded in the *Prasasti Talang Tuo*. The ancient manuscript written in 684 BC described the vision of South Sumatrans people in preserving their natural resource in order to achieve equitable prosperity in life. Today, the vision is still lived within the mind of many people and practiced in day to day live. Sadly it were transferred effectively to the current generation. This is just an example of the importance of tacit knowledge in society.

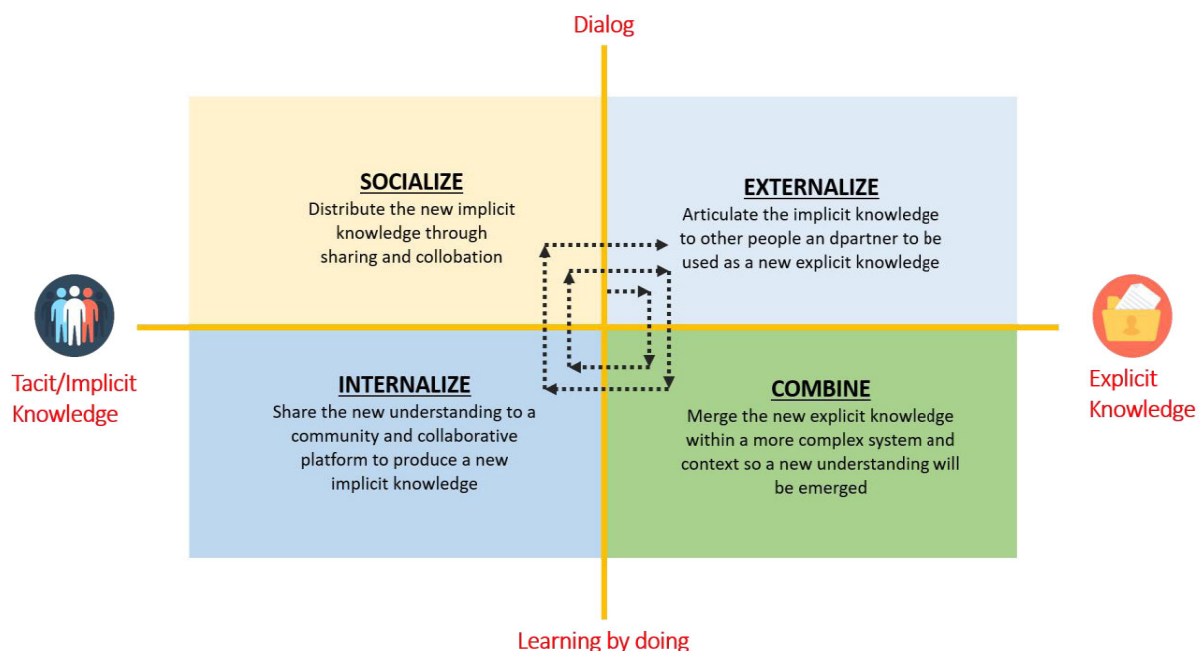


**Figure 4.** The ancient manuscript of *Talang Tuo*

Other form of important knowledge for green growth implementation is of course the explicit knowledge. Most explicit knowledge is technical or academic data or information that is described in formal language, like manuals, mathematical expressions, copyright and patents. This "know-what," or systematic knowledge is readily communicated and shared through print, electronic methods and other formal means. Explicit knowledge is technical and requires a level of academic knowledge or understanding that is gained through formal education, or structured study. Explicit knowledge is carefully codified, stored in a hierarchy of databases and is accessed with high quality, reliable, fast information retrieval systems. Once codified, explicit knowledge assets can be reused to solve many similar types of problems or connect people with valuable, reusable knowledge. Sharing processes often require major monetary investments in the infrastructure needed to support and fund information technology [5]. Explicit knowledge on sustainable landscape management has been produced constantly in South Sumatra. The vast and rich ecosystem of the area has been a target of many research and development project for years. More often than not, the knowledge from South Sumatra has been part of

many important scientific articles. It is timely now to collect, compile and manage all of those explicit knowledge as part of an active knowledge society. A collaborative knowledge management is therefore a must.

One thing remain as an issued is how to integrate tacit and explicit knowledge while at the same time improved them to become more accurate, up to date and fit with the current complexity of economic development in South Sumatra. Nonaka and Takeuchi (1995) [6] described an interesting framework called SECI (Socialize-Externalize-Combine-Internalize). The framework consist of four practical steps to make use of tacit knowledge, combined them with explicit knowledge, and then use it in a community of practice to become a new tacit knowledge. This cycle continuous indefinitely through two key activities: dialog and learning by doing. Nonaka and Takeuchi [6] explain that *socialization* is the process of converting new tacit knowledge through shared experiences, e.g. through spending time together, through apprenticeship, in informal social meetings outside the workplace, or beyond organizational boundaries, as often firms often acquire and take advantage of the tacit knowledge embedded in customers or suppliers by interacting with them. *Externalization* is the process of articulating tacit knowledge as explicit knowledge, thus allowing it to be shared by others, and it becomes the basis of new knowledge. *Combination* is the process of converting explicit knowledge into more complex and systematic set of explicit knowledge so as to create new knowledge. Through *Internalization*, explicit knowledge created is shared throughout an organization and converted into tacit knowledge by individuals. Internalization is closely related to "learning by doing" Knowledge creation is a continuous process of dynamic interactions between tacit and explicit knowledge. Organizational knowledge creation is a never-ending process that upgrades itself continuously [6].



**Figure 5.** The SECI framework, adopted from Nonaka and Takeuchi (1995) [6].

The SECI framework fit nicely into the context of South Sumatra green growth implementation. Tacit knowledge from local wisdom of community needs to be combined with explicit knowledge that has been produced by so many research project in South Sumatra. It is then needs to be internalize into a formal government bureaucracy and casted as a standard operational procedure of landscape management. In

time, through a process of dialog and discussion, the knowledge will be improved again through the same cycle.

### 5. Building a Collaborative Platform for Sustainability

The only problem with SECI framework is in institutionalization of the framework itself. Knowledge sharing on sustainable development needs to be facilitated by a body who can work with multiple stakeholders and at the same time implement the knowledge management system. In South Sumatra, this was addressed through the Green Growth Partnership Institution (*Lembaga Kemitraan Pengelolaan Lansekap Ekoregion Sumatera Selatan* or KOLEGA SUMSEL). This institution, formed by Governor Regulation No 16 year 2017 is a non-structural body formed by the Provincial Government of South Sumatra with a mandate to help the government in reaching for sustainable natural resource management in South Sumatra by coordinating a collaborative effort of government institution, private sector, CSO, academician and international organization. Taking the role of facilitator, the KOLEGA has been able to worked together effectively with all key stakeholder in South Sumatra. KOLEGA is a modern form of knowledge society where its member share their tacit and implicit knowledge through a joint activity, partnership and dialogue. It is a collaborative knowledge management for sustainability where each members contributed their knowledge and resources in order to achieve the target of Green Growth in South Sumatra.

### 6. Conclusion

The green growth strategy of South Sumatra is a long term process toward achieving sustainability in managing natural resources. It is comprehensive document with many elements of enabling condition. One of it is cooperation and collaboration among key stakeholders to implement the green growth strategy. There are many form of collaboration exist, however the most important one is collaboration in managing knowledge of implementing sustainable development. Tacit and explicit knowledge were an important aspect of knowledge management. It is also the foundation of knowledge society. KOLEGA SUMSEL is a form knowledge society which strive to achieve green growth vision through cooperation and collaboration. The cooperation models itself is an important contribution from South Sumatra to the development practitioners in other places.

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