

## **GREEN ECONOMY AND SUSTAINABLE DEVELOPMENT IN INDONESIA: CONSIDERING DISASTER MANAGEMENT AND KNOWLEDGE MANagements INTO ENTREPRENEURSHIP**

**Judith Marilyn Tomasowa<sup>1</sup>**

Universitas of Ciputra Surabaya  
INDONESIA

Email: [Judith.tomasowa@ciputra.ac.id](mailto:Judith.tomasowa@ciputra.ac.id)

### **ABSTRACT**

*In the name of economy growth and improvement in human's living standard, entrepreneurship is becoming the head-light topic. Many of entrepreneur education and trainings are given to the society as a mean to transfer the skills, knowledge and attitude to become a successful entrepreneur. This global movement in entrepreneur has increased the consumption of natural and social resources all over the world. Without proper understanding of the potentials dangers towards the eco-sytem and nature, which are hidden in the gobal movement of entrepreneurship, then the existance of humans and healthy environment are at stake. It has created severe global effects, social casualities, imbalance in ecology and natural disasters. Add to this account, Indonesia has many of potential disasters, natural factors and/or non-natural factors and human factors.*

*This paper analyzes and emphasizes the importance of taking into account disaster management in Green-Eco and Social Entrepreneurship through a case study of Indonesia and supporting data from United Nations and BPS (Indonesian National Agency for Statistic). It describes the urgency to include disaster management into entrepreneurship, so that the potential casualities in socials and natural desasters can be reduced.*

**Keyword:** economy growth, human's living standard, green-eco and social entrepreneurship, disaster management, sustainable development.

### **INTRODUCTION**

Entrepreneur has been admitted as a strong influencing agent in economy development, so that the economic cycle run well with less market failures. Entrepreneurs use production factors, such as land, capital, and labour, to provide goods that are needed by the markets.

The adding numbers of entrepreneur will turn the economy wheel faster, as more goods are produced, more resources are used in the processes. At the same time, environmental

degradation due to population growth in vulnerable areas continue (Pathirage et al., 2012), the frequent and extended natural disaster are increasing on a global scale. Entrepreneurs and the economic activities are exposed to natural, non-natural and social disasters.

Economy has evolved into Green Economy and Sustainable Development as it is as a based for UN 2030 Millennium Goals and ASEAN 2025 Economy Community Framework. Green Economy is trully as the best economic vehicle to achieve sustainable development goals. But, Green Economy and Sustainable Development are not the same as Disaster Management and Disaster Knowledge Management. Lack of awareness to consider it in entrepreneurship can be identified as one of the reason why disasters are increasing in numbers, as the following impacts that sustainable development and green-economy are failing to make the changes globally.

Green Economy and Sustainable Development are in UN 2030 Millennium Goals and ASEAN 2025 Economy Community Framework. At the same time, it is essentials to have green skills development and capacity building for workers, entrepreneurs and public entities (Pinninti, K. R. 2013). Without the skill development and capacity building then, green economy and sustainable development are impossible to be achieved.

Many International and National Institution, such as United Nation International Strategy for Disaster Reduction (UNISDR), [United Nations Office for the Coordination of Humanitarian Affairs](#), and [BNPB \(Indonesian National Agency for Disaster Management\)](#) have issued warning on present and future disasters. Some of predicted disasters are may happen at the global level, regional level, or at national level.

Disaster Management and Disaster Knowledge Management is a way to reduce the negative impacts of disaster towards human wellbeing, economic wellbeing and environmental wellbeing. Sustainable Development and Green-Economy in Indonesia must be measured from the facts and data from Disaster Management and human wellbeing, economic wellbeing and environmental wellbeing.

## **LITERATURE REVIEW**

### **Disaster Management**

The Government of Indonesia has defined “disaster” in the Act Number 24 of 2007 is an event or a series of events that threaten and disrupt the lives and livelihoods caused by natural factors and/or non-natural factors and human factors that lead to the emergence of human casualties, environmental damage, loss of property, and psychological impacts

Disaster event is a catastrophic event that occurs and is recorded by date of event, location, type of disaster, casualties and/or damage. In the event of some disasters on the same date and hitting more than one region, they are counted as one event.

The disaster driven factors are

1. Natural disaster factors: nature, which include earthquakes, tsunamis, volcanic eruptions, floods, droughts, hurricanes, and landslides.
2. Non-natural disaster factors: failure of technology, failure of modernization, epidemics, and outbreaks of disease.
3. Social disaster factor: humans, which include inter-community, inter-group or people social conflicts, and terrors.

Indonesian National Agency for Disaster Management (BNPB) catagorises 18 types of disaster:

1. **Earthquake** is a vibration or shock that occurs in the earth's surface caused by a collision between earth's plates, active faults, volcanic activities or rock debris.
2. **Volcanic eruption** is a part of volcanic activities known as "eruption". Danger of volcanic eruption can be hot clouds, thrown materials (red-hot materials), heavy ash rains, lava, toxic gases, tsunamis and floods of lava.
3. **Tsunami** comes from Japanese words, which mean sea waves ("tsu" means sea, "nami" means waves). Tsunami is a series of giant sea waves that arise due to a shift in the seabed due to an earthquake.
4. **Soil erosion** is one kind of soil or rock mass movement, or mixture of both, down or out of the slope due to disruption of slope compiling soil or rock stability.
5. **Flood** is an event or circumstance in which an area or land is damped due to increased water volume.
6. **Flash flood** is flood coming suddenly with a large discharge of water caused by stream damming on the river flow.
7. **Drought** is the availability of water far below the water needs for the necessities of life, agriculture, economic and environmental activities. As for the meaning of drought in agriculture is drought in farm fields with cultivated crops (rice, maize, soybean, etc.).
8. **Fire** is a situation where a building(s) in a place like houses/housing, factories, markets, and other buildings are affected by fire, causing casualties and/or damage.
9. **Forest and land fire** is a condition in which land and forest are affected by fire, resulting in deforestation and land degradation and causing economic or environmental value losses. Forest and land fire often leads to smoke disaster that can disrupt activities and health of surrounding communities.
10. **Tornado** is a strong wind coming suddenly, having an axis, with spiral-like circular movements and a speed of 40-50 km/h to reach the earth's surface and will disappear in a short time (3-5 minutes).
11. **Tidal waves or storm** are waves caused by the effect of tropical cyclone around Indonesian regions and very potentially causing a natural disaster. Indonesia is not the path of tropical cyclone, but the existence of tropical cyclone will provide a strong influence on the occurrence of high winds, heavy rains accompanied by high waves.
12. **Abrasion** is the process of coastal erosion by the power of destructive ocean waves and currents. Abrasion is usually referred to as coastal erosion. Damages to shoreline caused by abrasion are triggered by disruption of the natural balance of the beach area. Although abrasion can be caused by natural phenomena, humans are often cited as the main cause of abrasion.
13. **Transport accidents** are transportation accidents that occur on land, sea and air.
14. **Industrial accidents** are accidents caused by two factors, namely unsafe human acts and unsafe conditions. The type of accident that occurs depends on the type of industry, such as materials and tools used, work processes, working conditions, even workers involved.
15. **Extraordinary Incident** is the onset of or the increase in the morbidity or mortality incidence, which is epidemiologically significant in an area within a certain time. Extraordinary Incident Status is regulated by Decree of the Indonesian Ministry of Health Number 949/MENKES/SK/VII/2004.

16. **Social conflict** or **social unrest** or **riot** is a mass movement and that is destructive to the social order, driven by social, cultural and economic jealousy, usually packaged as a conflict between ethnics, religions, races or groups.
17. **Terrorism** is an action taken by any person who willfully uses force or threat of force, causing an atmosphere of terror or fear to people widely or causing mass casualties, by depriving liberty resulting in loss of life and property, causing damage or destruction of vital strategic objects or environment or international public facilities.
18. **Sabotage** is an action taken to weaken an enemy through subversion, inhibition, disruption and/or destruction. In war, the term is used to describe an activity of individuals or groups that are not associated with military, but with espionage. Sabotage can be carried out on several important structures, such as infrastructure, economic structure, and others.

Disaster Management is an integrated process of planning, organising, coordinating and implementing measures that are needed for effective dealing with its impact on people. The phases of Disaster Management are mitigation/preparedness, relief and long-term reconstruction (Pathirage at al., 2012).



Figure 1. Disaster Management Phases

**Disaster Knowledge Management**

Knowledge Management is a process by which knowledge is created, shared and utilized. Disaster Knowledge Management, along with good practices and lessons learned can reduce the consequences the negative impacts resulting from disasters. The implementation of disaster knowledge Management is facing challenges, such as technological, social, environmental, legal, economical, operational, institutional and political factors. (Pathirage et al., 2012).

**Green Economy and Sustainable Development**

Today economy is an open economy that evolved to Green Economy. The characteristics of Green Economy (Negrei, 2012). are:

1. Rational use of resources
2. Low level of carbon emission and less pressure on biodiversity (natural capital)
3. Creation of jobs with decent wages (as a component of social inclusion)

Green economy represents an intermediary stage needed on the road toward ecological economy and sustainable development., which it should reflect the ration between economy and policy. At the end, it will deal with the difficulties to doctrinate assumption of economy type, such as the neoliberal, social democrat and ecologist doctrines. There are alternative to address this issue by taking into account the matrix of the socio-economic development alternatives (Negrei, 2012):

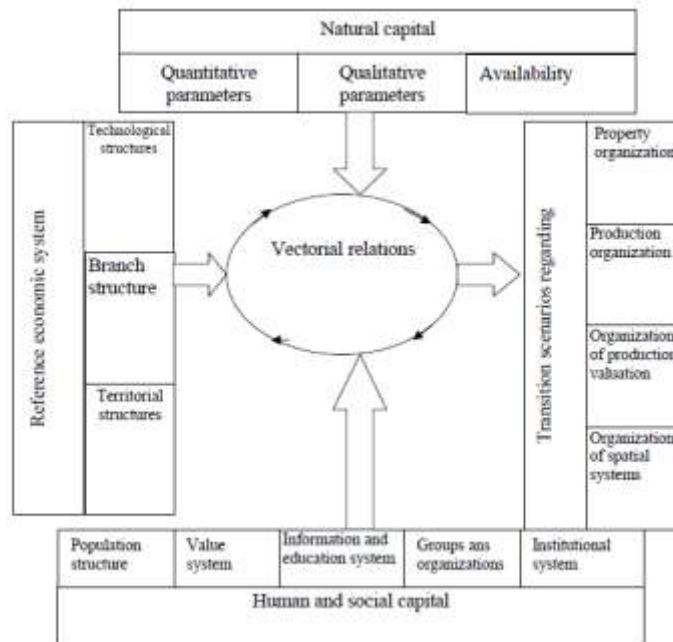
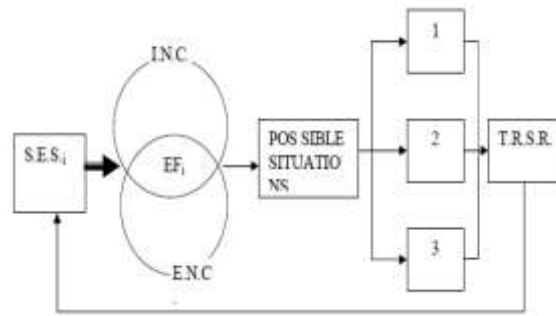


Figure 2. The development alternatives of the socio-economic system



**Figure 3. The ecological foundation and the sustainability of the socio-economy system**

- SES – socio-economic system
- TRSR – trend in relation with sustainability requirements
- INC – internal natural capital
- ENC – external natural capital
- EF – ecological foundation

A socio-economic system represents a construction based on the natural capital, it provides raw materials, energy and key services for local, national and global economy. Therefore the ecological foundation of the socio-economic system will well consider the internal natural capital, external natural capital (Negrei, 2012).

Bowen and Fankhauser argue that the Green economy implies “a paradigm shift” and the need for “deep, structural and systematic” changes in the economy. In the society it can be considered as a transformative potential in three levels: radical, minimal, and zero transformations. (Ehresman and Okereke, 2015).

Radical Transformation	Minimal Transformation	Zero Transformation
<ul style="list-style-type: none"> <li>• Steady state economy</li> <li>• De-growth economy</li> </ul>	<ul style="list-style-type: none"> <li>• Green Business</li> <li>• Marginal abatements</li> </ul>	<ul style="list-style-type: none"> <li>• Business as usual</li> <li>• Concept is a ruse</li> </ul>

**Figure 4. Green economy’s transformative potential**

In the relationship with sustainable development, Al Tayer, the Chairman of the World Green Economy Summit 2015 stated a green economy is the way to ensure sustainability on economy, environmental and social fronts to achieve people’s aspirations. (UAE Government News, 2015). So, green economy is also a tool for achieving sustainable development, facilitating rather than a replacement for sustainable development. (Ehresman and Okereke, 2015).

<b>Displacing Effect</b>	<b>Facilitating Effect</b>	<b>Reinforcing Effect</b>
Green Economy replaces sustainable development	Green Economy is a tool for achieving sustainable development	Green Economy is co-extensive with sustainable development

**Figure 5. Green economy’s relationship with sustainable development**

3 dimensions of well-being are measured by 2012 Sustainable Society Index (SSI), which is developed by the Sustainable Society Foundation in the Netherlands, they are human wellbeing, environmental wellbeing, and economic wellbeing. It states that global human wellbeing in their acts developing satisfactory in basic needs, health, personal and social development, they should also at the same time achieve environmental wellbeing and economic wellbeing. This index reflects the property idea of sustainable development is an integration of economical, environmental and human being. (Radu and Podasca, 2014).

**Table 1. 2012 Sustainable Society Index**

SUSTAINABLE SOCIETY INDEX		
Human Wellbeing	Environmental Wellbeing	Economic Wellbeing
<b>Basic Needs</b> (sufficient food, sufficient drink, safe sanitation) <b>Health</b> (healthy life, clean air, clean water) <b>Personal and Social Development</b> (education, gender equality, income distribution, good governance)	<b>Nature and Environment</b> (air quality, biodiversity) <b>Natural Resources</b> (renewable water resources, consumption) <b>Climate and energy</b> (renewable energy, greenhouse gases)	<b>Transition</b> (organic farming, genuine savings) <b>Economy</b> (Gross Domestic Product, employment, public debt)

(Source: Sustainable Society Index SSI 2012, Sustainable Society Foundation, <http://www.ssfindex.com/cms/wp-content/uploads/ssi2012.pdf>)

**Green Supply Chain Management and Environmental Justice**

Green supply chain management appeared in 1970’s which considered environmental factors. It brings in new design idea from society’s and enterprise’s sustainable development. Its purpose is to minimize the adverse impact on the whole supply chain on environment and maximize the resource utilization efficiency (Zhou, and Li, 2011).

**Table 2. The comparison between traditional SCM and green SCM**

	Differences	Traditional SCM	Green SCM
1	Scope of Study	Rarely deals with environmental protection and resource conservation	SCM problem, environmental protection problem, resources optimization problem
2	Gained Benefits	Maximal economic benefits by ignoring responsibilities related to external interests.	Comprehensive consideration of the unity of the economics benefits, environmental protection and resource conservation
3	Transmitted	Very common, almost ubiquitous	Integrated and optimized

	Information	and present	environment impact, resources protection, logistics and energy flow
4	Management Proses	One-way process from suppliers to consumers.	Each product life cycle process deals with designing, procurement, production, package, sales, use and recycling.
5	The pursuit of goal	Time, Quality, Cost, Service	Time, Quality, Cost, Service, Environment and Resources

The contents of green supply chain management are green strategy, green design, green procurement, green logistics, green marketing, green marketing. Establishing ecological industrial chain or ecological industrial park is the effective way to implement green supply chain management. (Zhou, and Li, 2011).

## RESEARCH METHODS

### Data Collection Technique

Data used are secondary data taken from BPS Indonesian National Agency for Statistic, and some of United Nations Agencies related to Indonesian Key Economics and Social Statistic, Disasters in Indonesia and world wide.

### Data Analysis Technique

The data is analysed by using qualitative analysis, PESTEL strategic analysis on current economy and potential disasters.

## FINDINGS

### Social and Economic in Indonesia based on 2011 – 2015 Indonesia Key Statistical showed (Table 3)

#### Social:

- a. Decreasing in progress/quality: Labour Force Participation Rate, percentage of poor people, unemployment rate (starting 2012)
- b. Increasing in progress/quality: total of population, human development index, life expectation rate, literacy rate age

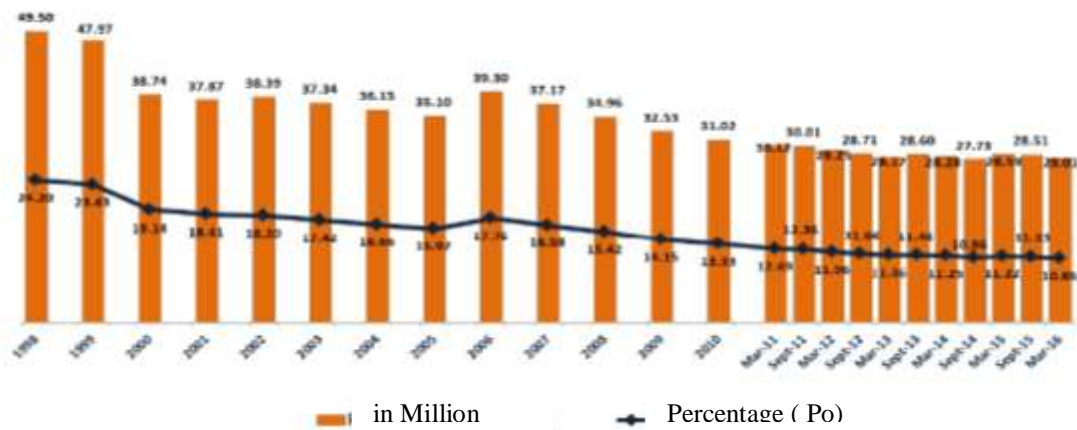
#### Economic

- a. Decreasing in quality/progress: economic growth, export, import
- b. Increasing in quality/progress: GDP, Per Capita GDP, realization of domestic and foreign investment



Table 3 . 2011-2015 Indonesia Key Statistics. Statistical Yearbook of Indonesia 2016, BPS.

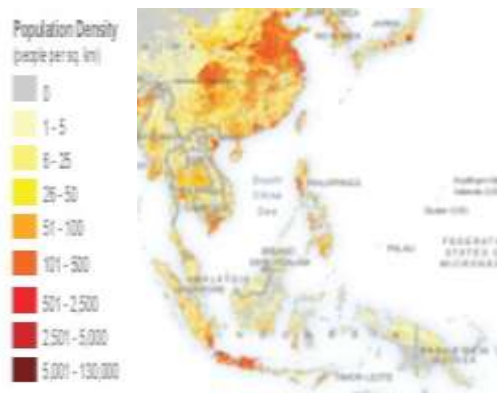
Rincian/Description	Satuan/Unit	2011	2012	2013	2014	2015
(1)	(2)	(8)	(9)	(10)	(11)	(12)
<b>SOSIAL/SOCIAL</b>						
Penduduk <sup>1</sup> /Population <sup>1</sup>	Juta/million	242,0	245,4	248,8	252,2	255,5
Laju Pertumbuhan Penduduk <sup>1</sup> /Population Growth <sup>1</sup>	%	1,44	1,41	1,37	1,35	1,31
Angka Kelahiran Total-AKT <sup>1</sup> /Total Fertility Rate-TFR <sup>1</sup>	anak/child	2,47	2,44	2,42	2,39	2,37
Angka Kematian Bayi-AKB (per 1000 kelahiran hidup) <sup>1</sup> Infant Mortality Rate-IMR (per 1000 life births) <sup>1</sup>	bayi infant	28,6	27,9	27,2	26,6	26,0
Angka Harapan Hidup <sup>1-e<sub>y</sub></sup> /Life Expectancy Rate <sup>1</sup>	tahun/years	70,0	70,2	70,4	70,6	70,8
Angka Melek Huruf Usia 15+/ <i>Literacy Rate Aged 15+</i>	%	92,8	93,1	93,9	95,9	95,2
Tingkat Partisipasi Angkatan Kerja -TPAK <sup>2</sup> <i>Labour Force Participation Rate-LFPR<sup>2</sup></i>	%	68,3	67,8 <sup>3</sup>	66,8 <sup>3</sup>	66,6 <sup>4</sup>	65,8 <sup>4</sup>
Tingkat Pengangguran Terbuka-TPT <sup>2</sup> <i>Unemployment Rate-UR<sup>2</sup></i>	%	6,6	6,1 <sup>3</sup>	6,2 <sup>3</sup>	5,9 <sup>4</sup>	6,2 <sup>4</sup>
Penduduk Miskin <sup>5</sup> /Poor People <sup>5</sup>	Juta/million	30,0	29,1	28,1	28,3	28,6
Persentase Penduduk Miskin <sup>5</sup> <i>Percentage of Poor People<sup>5</sup></i>	%	12,5	12,0	11,4	11,2	11,2
Indeks Pembangunan Manusia-IPM <sup>6</sup> <i>Human Development Index<sup>6</sup></i>	-	67,1	67,7	68,3	68,9	69,6
<b>EKONOMI/ECONOMIC</b>						
Produk Domestik Bruto (PDB) Harga Berlaku <sup>7</sup> <i>Gross Domestic Bruto (GDP) at Current Price<sup>7</sup></i>	triliun rupiah trillion rupiahs	7 831,7	8 615,7	9 546,1	10 565,8 <sup>x</sup>	11 540,8 <sup>xx</sup>
Laju Pertumbuhan Ekonomi <sup>8</sup> /Economic Growth <sup>8</sup>	%	6,2	6,0	5,6	5,0 <sup>x</sup>	4,8 <sup>xx</sup>
PDB Per Kapita Harga Berlaku <sup>7,9</sup> <i>Per Capita of GDP at Current Price<sup>7,9</sup></i>	Juta rupiah million rupiahs	32,4	35,1	38,4	41,9 <sup>x</sup>	45,2 <sup>xx</sup>
Inflasi/Inflation (y-o-y)	%	3,8 <sup>11</sup>	4,3 <sup>11</sup>	8,4 <sup>11</sup>	8,4 <sup>12</sup>	3,4 <sup>12</sup>
Ekspor/Export	miliar/billion US\$	203,5	190,0	182,6	176,0	150,4
Impor/Import	miliar/billion US\$	177,4	191,7	186,6	178,2	142,7
Wisatawan Asing/Foreign Tourists	Juta/million	7,6	8,0	8,8	9,4	10,2 <sup>x</sup>
Uang Beredar Luas (M2) <i>Broad Money</i>	triliun rupiah trillion rupiahs	2 877,2	3 307,5	3 730,4 <sup>f</sup>	4 173,3	4 548,8
Posisi Cadangan Devisa/Reserve Asset Position	miliar/billion US\$	110,1	112,8	99,4	111,9	105,9
Realisasi Penanaman Modal Dalam Negeri-PMDN <i>Realization of Domestic Investment</i>	triliun rupiah trillion rupiahs	76,0	92,2	128,2	156,1	179,5
Realisasi Penanaman Modal Asing-PMA <i>Realization of Foreign Investment</i>	miliar/billion US\$	19,5	24,6	28,6	28,5	29,3
Suku Bunga Sertifikat Bank Indonesia (1 bulan) <sup>13</sup> <i>Interest Rate of Bank Indonesia Certificate (1 month)<sup>13</sup></i>	%	5,0	4,8	7,2	6,9	7,1
Kurs Tengah US\$/Middle Rates of US\$	rupiah/rupiahs	9 068	9 670	12 189	12 440	13 795
Indeks Harga Saham Gabungan (IHSG) <i>Composite Stocks Price Index (CSPI)</i>	-	3 822,0	4 316,7	4 274,2	5 227,0	4 593,0



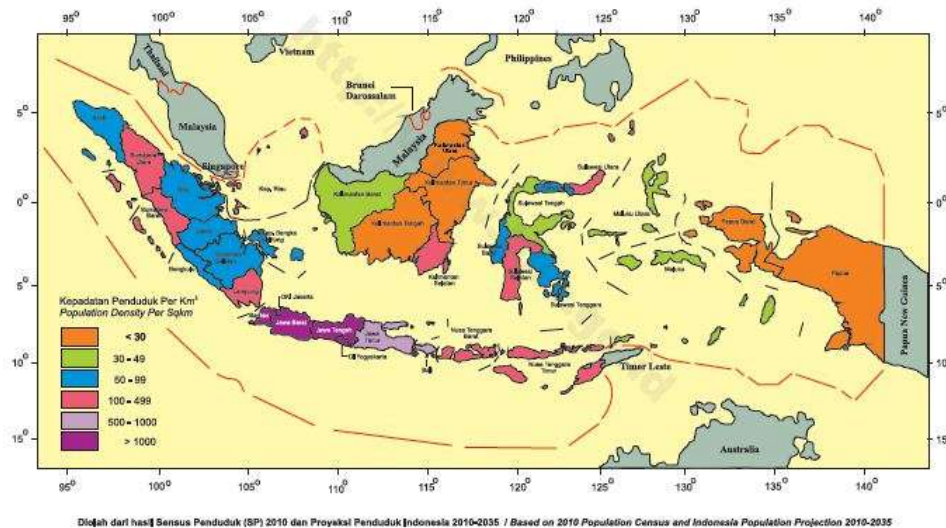
**Figure 6: The Total and Presentage of Poor Citizen in 2010 – 2016, based on National Social Economy Survey by BPS.**

**Population Distribution**

Population in East Asia is concentrated in areas with high economy growth and economy activity, better living standard. In Indonesia the population is concentrated in Java island. Most of Kalimantan, Maluku and Papua Islands are having the most least population.



**Figure 7. East Asia Population Density.**  
Source: July 2015 Population Density UN OCHA



**Figure 8. Geographic Situation and Population Density of Indonesia, 2015 Source: Statistical Yearbook of Indonesia 2016, BPS.**

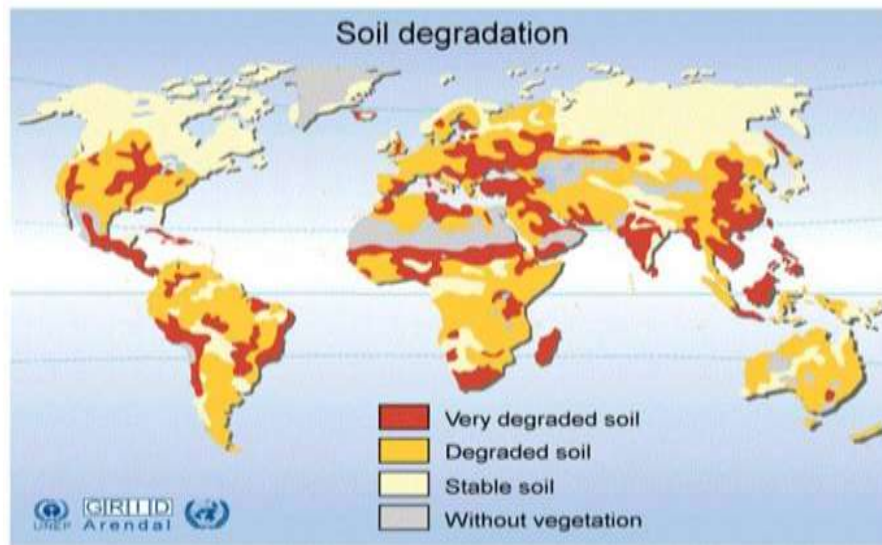
### Soil Degradation & Less Haverst

FAO has issued a statement in 2003, that natural land resources are being degraded, which caused by:

1. Soil erosion
2. Salinisation of irrigated areas
3. Dry land degradation from overgrazing
4. Over extraction of ground water
5. Growing susceptibility to disease and build-up of pest resistance favoured by the spread of monocultures
6. The use of pesticides
7. Lost of biodiversity
8. Erosion of the genering of genetic resource base due to modern application

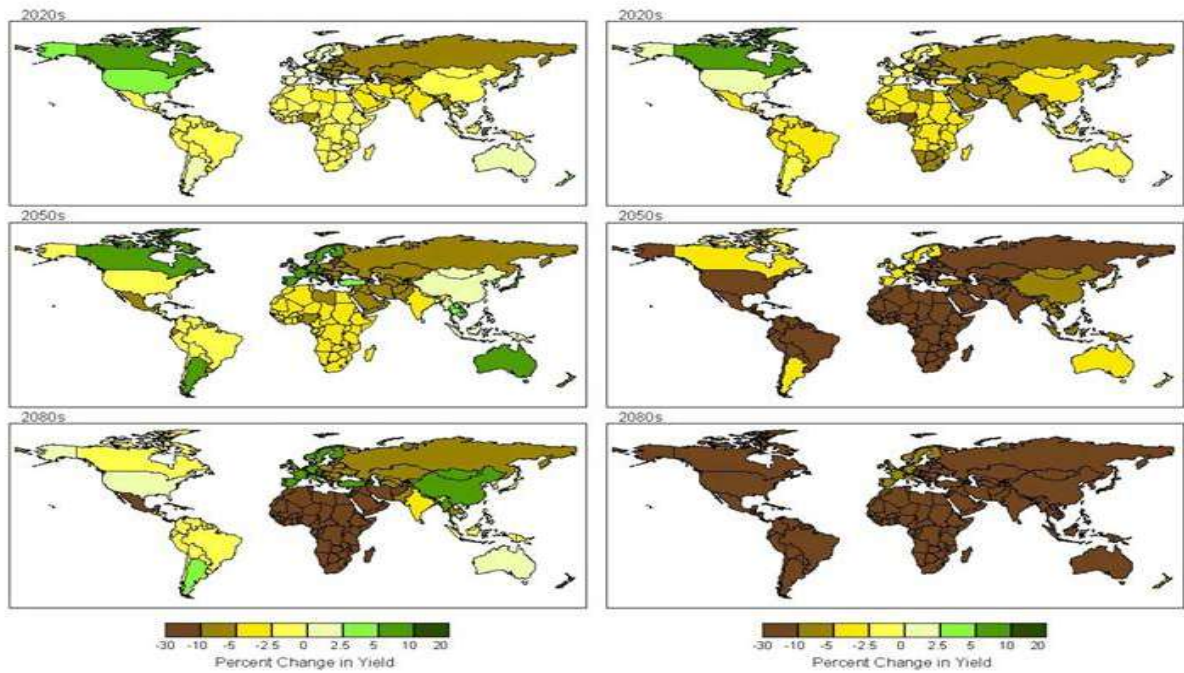
Based on Global Soil Degradation Report in 2008 by IAASTD - International assessment of agricultural science and technology for development and UNEP/GRID-Arendal:

- Half of the world soil has degraded soil
- Java and Kalimantan Island are in very degraded soil, and the soil of rest of Indonesia Islands are degraded.



**Figure 9. Global Soil Degradation Spreading.  
Source: Global Soil Degradation Report, 2008**

Degraded soil impacts on the harvest as warned in The Intergovernmental Panel on Climate Change (IPCC) 2014 5th assessment on food reports. Also as predicted by UNDP, that the cereal yield across the world is decreasing. (Figure 10).



**Figure 10. Hadley Models of Potential Changes without and with CO2 effect in National Cereal Yields by UNDP, 2004**

### Increasing Temperatures

Degraded soil influences the climate. Based on 2015 UN-OCHA Report, higher temperatures hits the globe. Most of the globe has 30-40 degree in Celcius. Increasing temperatures will influence the fauna dan floral world across the world.



**Figure 11. 2015 Maximum Temperatures by UN OCHA**

**Human Development Index, Crime Rate, Unemployment in Indonesia**

In the time range 2013 until 2015, Human Development Index is increasing. 5 cities with the highest index are used as samples: DKI Jakarta, DI Yogyakarta, Kalimantan, Kep. Riau and Bali.

**Table 4. 2013 – 2015 Data Series of -Human-Development-Index 5 Cities in Indonesia. This table is produced Criminal statistic data Source: Statistical Yearbook of Indonesia 2015.**

No	Province	Human Development Index		
		2013	2014	2015
1	DKI Jakarta	78.08	78.39	78.99
2	DI Yogyakarta	76.44	76.81	77.59
3	East Kalimantan	73.21	73.82	74.17
4	Kep. Riau	73.02	73.40	73.75
5	Bali	72.09	72.48	73.27

Within the time range 2013-2015, the total crime dan criminal rate in DKI Jakarta, East Kalimantan and Bali were decreasing. The total crime and criminal rate in DI Yogyakarta and Kep. Riau were increasing.

**Table 5. 2013-2014 POLDA (District Police Department) 5 Cities' Rank based on Total Crime and Crime Rate. Itis produced from BPS Criminal statistic data. Source: Statistik Kriminal 2014-2015, BPS.**

No	Province	Total Crime			Criminal Rate		
		2013	2014	Changes (%)	2013	2014	Changes (%)
1	DKI Jakarta	49498	44298	-11,74%	213	186	-12,68%
2	DI Yogyakarta	6727	7135	5,72%	191	201	5,24%
3	East Kalimantan	9251	9095	-1,72%	285	230	-19,30%
4	Kep. Riau	4278	4633	7,66%	232	240	3,45%
5	Bali	5980	5072	-17,90%	148	123	-16,89%

BPS declared in February 2016, 10 top cities with highest unemployment and unemployment rate. Kep. Riau and East Kalimantan are at the top of the list.

**Table 6 . Top 10 Unemployment in Indonesia based on 2016 May Social Economy Report by BPS**

<b>No</b>	<b>Province</b>	<b>Total Unemployment (000 persons) Feb 2016</b>	<b>Unemployment Rate (%) Feb 2016</b>
<b>1</b>	<b>Kep. Riau</b>	<b>82.5</b>	<b>9.03</b>
<b>2</b>	<b>East Kalimantan</b>	<b>146.2</b>	<b>8.86</b>
<b>3</b>	<b>West Java</b>	<b>1,899.7</b>	<b>8.57</b>
<b>4</b>	<b>Aceh</b>	<b>181.8</b>	<b>8.13</b>
<b>5</b>	<b>Banten</b>	<b>452.1</b>	<b>7.95</b>
<b>6</b>	<b>North Sulawesi</b>	<b>92.6</b>	<b>7.82</b>
<b>7</b>	<b>Maluku</b>	<b>51.2</b>	<b>6.98</b>
<b>8</b>	<b>North Sumatera</b>	<b>428.0</b>	<b>6.49</b>
<b>9</b>	<b>Bangka Belitung</b>	<b>42.4</b>	<b>6.17</b>
<b>10</b>	<b>Riau</b>	<b>176.9</b>	<b>5.94</b>

#### **Disasters in Indonesia**

During 2012 - 2014, the number of casualties and people affected by natural disasters was increased. The Java Island remained highly prone to disaster events related to hydro-meteorological incidents. The beginning and end of the year were observed as the most critical times. Floods are the most fatal disaster, which claimed most lives compared to other events. 97% of the natural disaster events that occurred during the period 2012 -2014 were hydrometeorological disasters with Flood being the most frequent one. Central Java province is the most frequently affected by disasters during 2012-2014. (Indonesia Disaster Statistics 2012-2015, 2015).

#### **PESTEL ANALYSIS**

5 cities in Indonesia, DKI Jakarta, DI Jogjakarta, East Kalimantan, Kep. Riau, and Bali are used as samples in PESTEL Analysis.

#### **PEST towards macro environmental elements**

##### **Political**

- Law enforcement and good supervision to ensure environmental wellbeing in economies.
- Possible new regulation and deregulation in environmental & safety regulation by the Indonesian government.

	<ul style="list-style-type: none"> <li>• Pressure Group lobbying the Indonesian government and private sectors to consider the Natural Disaster in Sustainable Development and Green Economy.</li> </ul>
Economical	<ul style="list-style-type: none"> <li>• Potential and curent natural disasters (soil degradation, high tempratures) creates potential negative impacts in supply, production and sales, especially in basic need industries.</li> <li>• Disasters has made high costs in supply, production and sales which created cost-pull pricing.</li> <li>• Decreasing Economic growth, Unemployment Rate, Labour Force Participation Rate has decreased society purchasing power.</li> <li>• Supply Chain Managements used by entities in Indonesia are mostly likely the traditional Supply Chain Management, due to the flood that often occured in Central Java. Central Java is one of most populated province in Indonesia.</li> </ul>
Social	<ul style="list-style-type: none"> <li>• Population spread are concentrated in big cities mostly in Java Island due to centered economy activities.</li> <li>• Kep. Riau has high total crime and total criminal rate due to high unemployment rate and low Labour Force Participation Rate.</li> <li>• DI Jogyakarta has high total crime and total criminal rate due, althoug it has high Human Development Index. It most likely since natural disaster were mostly occured in Central Java, which is the sorrounding area of DI Jogyakarta.</li> <li>• Bali, Jakarta and DI Jogyakarta have better employment rate since these provinces have active tourisme industries , that is an intensive labour industry.</li> <li>• Kep. Riau has high total crime and crime rate due to Unemployment Rate.</li> <li>• Soil degradations in Java has made agriculture sectors in Java has less productivity and it leads to increasing unemployment rate and low labour participation rate.</li> </ul>
Technological	<ul style="list-style-type: none"> <li>• Percentage of Poor People, unemployment rate are increasing although Human Development Index is High.</li> <li>• Green skills development and capacity building for workers, entrepreneurs and public entities are not well developed.</li> <li>• R&amp;D, Green skills development and capacity building depend on government &amp; private sector's goodwill</li> </ul>



## **CONCLUSION AND RECOMMENDATIONS**

### **Conclusion**

- Sustainable Development in Indonesia is in the Minimal Transformation, that the still marked by green business and marginal abatements.
- The Supply Chain Management in Indonesia is most likely still using Traditional Supply Chain Management, that ignore the environmental issues and not considering disaster management and disaster knowledge management.
- Sustainable Society Index in Indonesia is still low, due to low human wellbeing, low economical wellbeing, and low environmental being.
- Green Economy in indonesia is still considered that it replaces sustainable development.

### **Recommendations**

Since sustainable development and green-economy system in Indonesia are still in the minimal transformation and displacing effect, then entrepreneur and entrepreneurship must consider the disaster management and disaster knowledge management in sustainable development and green-economy.

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