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Procedure Inside Actors for Taking Activities (PIATA): An enabling model to support socio-environmental policy planning process

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Abstract

Environmental problems have become more complex and massive. An example of this is high meat consumption culture, which can be categorized as an un-eco-friendly habit according to its contribution to climate change. This research was set up by conducting a sustainability challenge to 50 participants in total in Indonesia and Australia on shifting behavior from un-eco-friendly to eco-friendly culture, viz. becoming a less or zero meat eater. Through the human ecology approach, this research applied a social experiment and an autoethnography approach. At the end of this challenge, all participants were interviewed about their experiences to understand the backgrounds of why people choose to conduct activities or behavior, which are either detrimental to or nurture the environment. Once participants' responses are tabulated and analyzed, this research ends with a model, called PIATA (Procedure Inside Actors for Taking Activities). It maps the process of each actor to decide on activities to take. This model also explains the relationship between agents, and how they can influence one another. This model can help policymakers to map the establishment process of culture among societies. Actors with the power to set regulations have the most power to steer cultural shifting as it can bind people's activities and initiate cultural shifts. The same goes for pro-environment cultural shifting.

Introduction

The anthropogenic era was characterized by human dominance, which caused geological force on the environment and the atmosphere (Crutzen, 2006; Laurance, 2019; Malhi, 2017). Individuals become the principal actor in deciding the ecological dynamics (Bai et al., 2016; Brondizio et al., 2016; Geisen et al., 2019; Laurance, 2019; Lewis & Maslin, 2015; Steffen et al., 2011). Many findings show that in the anthropogenic era, many environmental problems have occurred and some are at an acute level (Abatzoglou & Williams, 2016; Burger Chakraborty et al., 2013; Rangel-Buitrago et al., 2020).

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Anthropogenic factors can render various environmental problems, one of which is affecting climate change. The issue of climate change is our baseline study in this research. According to Stern et al. (2014), anthropogenic factors have had a greater impact on climate change since 1970.

One of the major anthropogenic causes of climate change is livestock farming (Intergovernmental Panel on Climate Change [IPCC], 2013; Ruddiman, 2003; Trenberth, 2018). From 1998–2018 there was a significant increase in global meat consumption by about 58 percent (Whitnall & Pitts, 2019). The increase in meat and poultry demands is due to changes in society's socio economics such as diet and lifestyle, rising income, and population growth (Alkerwi et al., 2015). Moreover, studies from Ritchie et al. (2017) and Milford et al. (2019) showed a strong positive relationship between the average GDPs per capita and per capita meat supply. According to the Organisation for Economic Co-operation and Development (OECD, 2021), the global meat demand projection will be higher by around 15 percent, and the meat consumption per capita is expected to rise to 35.4 kg retail per weight in 2027. Numerous nations have a high meat-eating habit, one of which is Australia. According to OECD (2021), in 2020, Australia's meat consumption per capita per year reached 89.5 kilograms and even Wong et al. (2013) stated that Australia reached 111 kg per capita in 2011. In contrast, the neighbouring country, Indonesia, only consumes 11.8 kg of meat per capita (OECD, 2021).

High meat-eating habits can be one of the triggers of the climate crisis. To fill the meat demands in Brazil, land use changes occur on a large scale, changing from wood ecosystem to grass terrains (Wolfe, 2009). The high demand of livestock also has negative effects for the environment such as greenhouse gas (GHG) emissions, water scarcity, water pollution and land degradation (González et al., 2020; Rojas-Downing et al., 2017). There is a lot of research about minimizing the GHG in livestock management and how to handle it (Marques et al., 2020), but less spotlight on how to minimize the livestock demand. Substantively, understanding the reasons behind the demand, altering the diet and changing people's perspective about livestock are also important.

Environmental problems are closely related to how societies conduct activities according to the values they believe in, which is manifested in culture. Therefore, there is a close relationship between culture, humans and the environment, which is known as human ecology. Human ecology is a multi-disciplinary way to understand the relationship between people and nature (Dyball, 2012). Boyden (1992) found two relationships between humans and nature: the first one is the relationship between biosphere and humans, and the second is the relationship between culture and humans. In both relationships, the human's position is central. Bennett (1996) said that human ecology is a result of human conduct. In this way, finding out about human nature will intently identify with the dynamic of human culture. Human ecology is often overlooked in understanding the current environmental situation, including how it relates to worsening environmental conditions such as rising earth temperatures, forest destruction, and so forth.

People's aggregate activity can have negative effects on nature; the inverse is additionally exact; constructive outcomes can be accomplished when people's aggregate action is executed to safeguard the environment. Managing maintainability issues sometimes requires adjusting human conduct, and this procedure lacks socio-cultural adjustment (Dyball, 2012). So, what are individuals be able to do to encourage this change? An individual can be a social ecologist, working as an alteration agent by the intervention (Dyball, 2012) and they can initiate a new behaviour (Dyball & Newell, 2019). Consequently, the community has the capacity to make a change. Practices and culture among societies are dynamic, yet once in a while, specific social practices, called resilient social practices, keep going for quite a while. To make a fruitful social change, seeing how the system works is vital. We selected climate change, whose impacts are felt globally when the causes are carried out by only a few parties (Duvat et al., 2017; Kelman, 2014; Layton-Matthews et al., 2018), as the entry point because it is a form of socio-ecological system that occurs in the society.

Understanding the reasons behind people caring or not caring about the environment could help map the potential approach, supporting programs, regulations, or policies to create new eco-friendly cultures among societies. A social experiment in individual scope is required to understand the people's mind-set in order to have a bigger picture of how society reacts. Moreover, according to Rickard et al. (2014), by stressing individual responsibility on the environment, we can get more comprehensive and deeper attention. The environment is one of the determinants that influence humans in the process of cultural production. Therefore, the pattern of human interaction with the surrounding environment is a study material that is never obsolete for anthropologists (Crate & Nuttall, 2016). Recognition of the importance of the human dimension in research on climate change is evolving and the socio-cultural aspects of climate change are important. However, studies in this aspect have not been widely studied and studies

still tend to focus on technical topics (Roncoli et al., 2016) and there is still a gap between anthropological studies and the interests of policy makers (Nadzir, 2012). This research explores the community's response at the individual level in an effort to contribute in a more sustainable environment. The results of the analysis of these responses are developed to answer other environmental issues so that the output will be more general in nature.

Methodology

Data Collection

This research applied a case study approach (Seawright & Gerring, 2008). The researchers chose to focus on minimizing eating meat. Eating less meat is perceived as an action that contributes to combating climate change, and being an eco-friendly lifestyle. This research was carried out in two countries that have different cultures of meat consumption, viz. Indonesia, which has a lower meat-eating culture, and Australia, which has a high meat-eating culture. It was not intended to judge the eating habit of those countries, but selecting two different cultures can benefit researchers in enriching social diversity.

This research consists of two data collection methods, viz: (1) social experiment through participant observation (Jorgensen, 2015); and (2) autoethnography approach (Ellis et al., 2011; Mitra, 2010). In this experiment, participant observation was used to elaborate a deeper understanding of people's reaction, thought and acceptance towards the studied phenomenon by joining and observing them in their natural environment (Kawulich, 2005; Musante, 2015; Shah, 2017). Moreover, in order to have a realistic analysis and comprehend the cultural experience, the researcher became part of the study and conducted autoethnography. Autoethnography is an approach to systematically analyzing and describing the personal experience, or the researcher can be a part, or the central part of the study to understand the social experience (Ellis et al., 2011; Wall, 2008). Autoethnography helps the researcher to understand a matter by getting into a real studied phenomenon (Byczkowska, 2009) and to solve an issue that to be directly involved in the problems experienced by informants is not an easy matter for researchers (Nadzir, 2012).

In this social experiment, 50 people in total joined the challenge to shift an eating habit from routine meat-eater to less meat eater for two weeks. Half of the participants were living in Indonesia, and the rest were living in Australia. Each participant could give up before the end of the challenge, refuse at the early offer, or accomplish the challenge. At the end of the challenge, all participants were interviewed about their consideration of their acts during the challenge. This evaluation intended to comprehend the triggers of people to sustain their environment by living an eco-friendly life.

Data Analysis

The data were analysed by combining the descriptive analysis approach and the resilience thinking approach (Resilience Alliance, 2010). The resilience thinking approach is useful to map the creation of resilience culture, in this case, meat consumption culture. In qualitative research, data analysis is inductive, the results of the research emphasize meaning, and study as much as possible an individual, a group or an event (Sugiyono, 2008). This study also makes some generalizations so that the finding is also applicable to other environmental problems. The finding could be developed to construct a more general explanation of the background of individual and other levels of society in the process of culture embodiment either sustaining or detrimental for the environment. As this study focuses on human behaviour, the Gestalt theory was used as human behaviour is more caused by perceptual processes. Studying the process of human perception and cognition is more important than studying over behaviour (Helmi, 1999).

Results and Discussion

Case Study Context: The Challenge Experience and Resilient Culture of Big Meat-Eating Habit

Figure 1 and 2 below summarize the response of the respondents to conduct the eating habit shifting. Most of the respondent failed to accomplish this two-week challenge. Only three respondents were persistent enough to finish this challenge. Twenty-two respondents refused to accept this challenge. Practicality in dish preparation was the main reason why they hesitated to join and accomplish this challenge, with 44 percent of respondents simply not interested to do eating habit shifting. Interestingly, 40 percent of respondents put environmental care as the reason to agree to joining this new habit study. It shows that the agent of change in this case was the researchers, able to influence others to start paying more attention to an environmental issue in their daily life. Thus, an agent of change's role in creating a better environment is relevant.

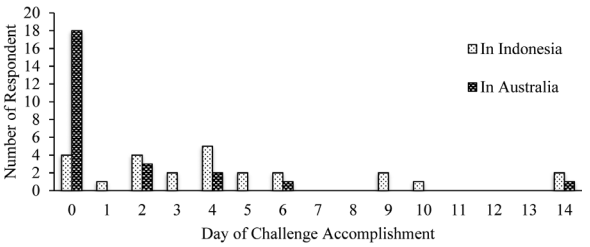

Figure 1 Follow-up of the respondents to the proposed habit shifting

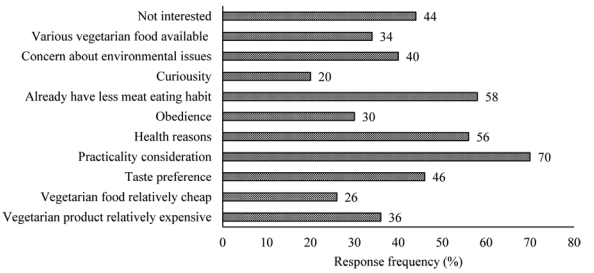

Figure 2 Respondent's reasons to trying or not trying to change an eating habit

The ability and reasons of the respondents to conduct the habit shifting are various. Respondents from big-meat eating country tended to refuse in conducting this shift. Cultural shifting, as a form of social change, sometimes requires a long time to prevail. However, it remains possible to be boosted. Here, social interactions are functioning through the role of the agents of change. Thus, we need to discuss the potential prevailing factors inside the agent of change that can either hinder or help society to be moved. This is the basis of the importance of discussing how some cultures become resilient to change. The resilience thinking approach (Walker & Salt, 2012) can help understand that complex socio-ecological phenomenon. Figure 3 below shows our elaboration of the dynamic resilience system of a big meat-eating habit.

An element required to break a resilient culture is a disturbance, viz. societal transformation. So, the next question is how to initiate the transformation. Inserting an element to be a strong booster is required (Boyden, 2001). In terms of shifting culture from big-meat to less-meat eater, significant change might be achieved through policy intervention. Rather than a policy restriction to eat meat, the policy has more focus on how to encourage society in promoting less meat culture lifestyle. As an example in the Australian context, due to limited vegetarian meal options,

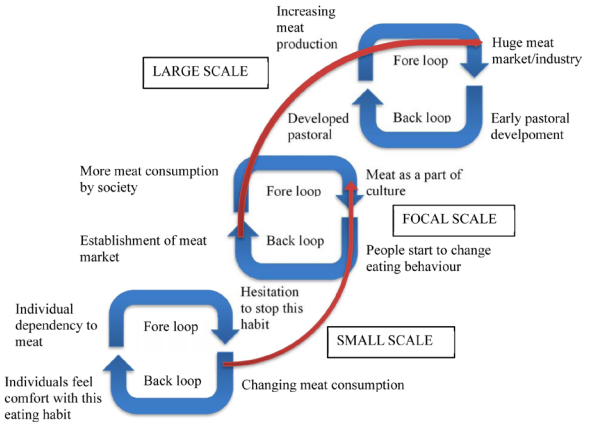

Figure 3 Resilience system of huge meat-eating culture

eating out makes Australians reluctant to be a vegetarian (Lea & Worsley, 2001). This calls for the implementation of a policy that fosters the variety of vegetarian food served by restaurants. Another policy also relevant to be initiated is by engaging youth in mainstreaming vegetarian culture through the education system, as education can influence people to attach to certain ideologies (Alexander, 2005). Many more forms of policy can be taken, and these tend to boost societies' awareness of more eco-friendly habits.

The Wider Context: The Emergence of The PIATA Concept

This challenge shows that human behaviour is changeable and the inspiration to initiate changes can come directly and/or indirectly, and social interaction is essential in this stage. Not only by verbal engagement, individuals can engage and inspire other people through their behaviours and activities. As an example, how a company contracts a public figure as their ambassador. Their influence can engage others to buy a certain product or brand, or to inspire them to follow what the ambassador performs. Currently, influencer is an emerging term of individuals who have a role in engaging individuals and communities to follow what they are doing and be inspired (Bakshy et al., 2011).

Learning from one example of the "unsustainable cultures" from this study, many environmental problems remain not considered as a serious problem. Some believe that the climate crisis is unreal. There is a thought that the environment remains able to absorb anthropogenic disasters. When its capacity has passed the thresholds, which is unpredictable (Groffman et al., 2006), however, the environment will create its balance which might be harmful for civilization. As a complex system, the biosphere will also adapt to changes that are mostly rendered by human activities. Considering that to fully comprehend this complex system is formidable, this should be a base to nurture the environment to keep its functions running well. When the environment is changing, people can also adapt through their activities or developing

adaptive technologies, however, today's society should also reflect that the fate of the next generations strongly depends on our current behaviours. This is a form of intergenerational justice. As an individual, we have capabilities to make some change (Grimm et al., 2006) and help our environment in certain possible ways.

This social experience enables researchers to learn human ecology in a direct experience. We understand that routine activities constitute individual behaviour. Regardless of whether the sustainability challenge is undertaken, the relationship between humans (through their activities) and ecology can be determined. Hiller (2011) explained individual causal inefficacy, in which significant impact is created indirectly by the personal act. For instance, if a person does not consume meat by any means, this will not drastically diminish the meat market. In another example, a community that prefers riding bikes rather than driving cars to the office will not drastically reduce air pollution. Nonetheless, we argue that when it is acknowledged and actualized within a broader scale of society, the outcomes can be progressively noticeable. Understanding each actor's reason to do or not commit the task is essential. In this way, it can be valuable to break down prevailing impacting factors for their choice and to construct a suitable approach(s) to achieve the target(s) that we have set.

The social experiment carried out was the entrance to assembling a more general model so that it can be applied to various social-environmental phenomena that occur in the community. The inductive research model allows researchers to explore more deeply the socio-environmental phenomena outside of having less meat-eating habits, which are relevant to enrich the findings of this sustainability challenge. The inductive approach allows researchers to discover new theories (Hodkinson, 2008). From the social experimental results, it is concluded that there are 3 stages that will always appear, namely, the valuing and deciding stage, implementing stage, and reacting stage, as well as the existence of internal and external factors that will influence each stage. Meanwhile, the exploration results lead researchers to present a more general model called PIATA (Procedure Inside Actors for Taking Activities) (Figure 4 and Figure 5).

The PIATA model is a mapping tool on how the socio-ecological phenomenon is created. The cycle in PIATA is circular and dynamic. Likewise, culture is dynamic and proceeding. Each actor at any level has various factors in the valuing and the deciding stages to conduct actions. The influencing factor is possible to be more than one, various for each actor, and changeable over time. Once the actor decides on an action to be taken, it will end up with some results, outputs, and impacts. This processing stage is also influenced by internal and/or external factor(s). Actor(s) then will assess the result of this stage, and they will constitute reaction(s). The reaction can be continuing, adapting, modifying, removing, stopping, replacing, neglecting, and imitating (following).

Figure 5 explains that every agent and level of agent has a chance and power to influence other actors. It can be within or across the scale or even both.

Each actor/agent has a likelihood of affecting another, either inside or over the scale. What the agents do or potentially accomplish is possible to influence different actors. The type of effect can be copying, staying away from, or coping with some change or alteration. Here, social connections and social interactions work. An example is how a social movement like World Wide Fund for

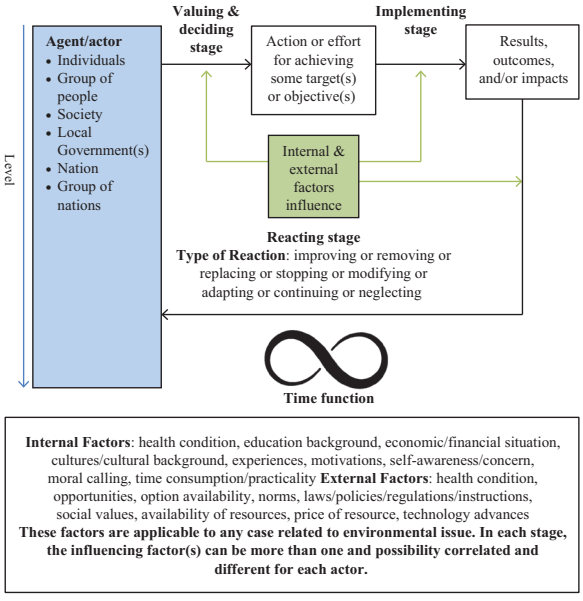

Figure 4 The PIATA concept flow chart

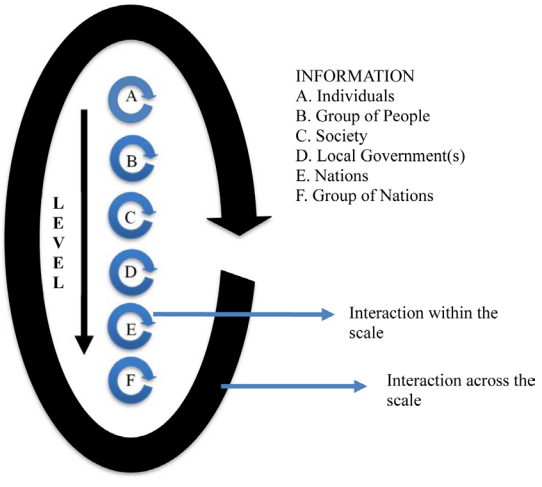

Figure 5 The interactions between actors

Nature (WWF) conducts an earth hour program, which is followed by a tremendous number of people globally trailing it (Fernández et al., 2015; Jechow, 2019; Sison, 2013). A simple current phenomenon as a clear example is how a sponsor endorses social media celebrities to influence their followers to buy a certain product, as the world is connected and influenced by social media (e.g. Rapp et al., 2013; Wang et al., 2011; Warren et al., 2014). All those examples show that actors, even at an individual level, have the capability to influence others, and this can be harnessed to promote eco-friendly behaviors.

The Wider Context: People-Society-Culture-Ecology Nexus

Human culture is created over time. Boyden (2004) divided social culture advancement into four stages: the hunter-gatherer, the early cultivating stage, the old urban, and the high-utilization stage. We are in the last stage, where the innovation dynamic is relatively steady and it profoundly impacts our behaviour. People's manners towards the earth have likewise changed, corresponding with cultural evolution. The present generation may not comprehend where our vegetables originate from; they may essentially realize that we can simply get them at a market. Without consideration regarding natural supportability, society's doom will be at serious threat (Boyden, 2001). The connection between human behaviour, nature of the biosphere, and culture according to Glenn (2004) is as follows: Human cultures have a substructure namely learned behaviour, and it powers the development of human cultures. Human behaviour delivers an aggregate alteration in human environments. On the other hand, continually altering environments need proceeding behavioural adjustments. Useful adjustments can get inserted into socio-cultural practices and passed on to the next generations.

Numerous analysts contend that the effects of some social practices are compromising our society comprehensively (Ehrlich & Kennedy, 2005). Some human practices in culture today become a threat for nature. Dyball and Newell (2019) affirm that the biological system has cut-off points or limits to serve human conduct. Therefore, the environmentally destructive entrenched cultures ought to be to be shifted to eco-friendly cultures.

Cultural transformation is a complicated issue. We agree that the final solution seems to be impossible to completely accomplish (Brown et al., 2010). However, a change may create a more sustainable environment. Creating better environmental management requires social and cultural change and it can be actualized on numerous scales and levels. A case of a worldwide scope exertion to make an ecological change is via the Intergovernmental Panel on Climate Change (IPCC). This is a global action to accommodate and alleviate climate change phenomena. All scale of actors can actualize and implement the ecological changes in a more sustainable direction.

Function of the PIATA Concept in The Policy Planning Process

The PIATA model emphasizes how people at any level of society value something and decide what action they will take. During this stage, people are influenced by many factors, including the current policy. These factors, in many cases, are related to one another. Lessons learned from many countries around the world, law or policy tend to be the most effective ways to reach the target or goal. The law, which reflects the rational codification of values and norms within societies (Ruman, 2016), also seems to be the most influential factor that can influence other factors. The law and norms, which reflect the rational codification of values and norms within societies (Ruman, 2016), seem to be the most influential factors. We argue that law and its enforcement are the two most effective ways to initiate a cultural shift. A law potentially leads to a new and better social order (e.g. Oh, 2016; Troelstra et al., 2016). In this process, without diminishing the role of other levels of actors, the roles of government are essential. We tend to believe that like other changeable systems, un-eco-friendly cultures among society can also be shifted and law can have a significant role for this. As an example, the implementation of the timber legality assurance system required by importing countries drives a more sustainable wood trading and forest management in Indonesia.

In the policy planning process, this model can help in determining which is the most effective approach and influencing factors to engage people in changing their culture. The first thing to be prepared for is cultural construction (Holt, 2012). We underline that understanding which value of society most attached can help policymakers decide what factors need to be influenced, altered, or modified and they can analyse what element is required. At this point, having the PIATA model can be helpful.

Conclusion

The case study of this research is the entry point in the preparation of the PIATA model. This model is structured so that it can then be applied to cases related to other environmental crises other than cases of high-meat eating habits. This model is able to assist users in mapping the process of environmental damage caused by anthropogenic processes, where humans are at the center of an

environmental dynamic. For policymakers, this model can assist in formulating strategies and policies that are more pro-environment in order to create sustainable living and environmental management. The advantage most offered by this model is that it enables policymakers to analyse what factors can influence the community to create a change in living habits, which will lead to cultural change. Scientifically, the findings of this study also enrich the discourse on human ecology and emphasize that every component of society down to the individual level is able to make a positive contribution to our increasingly threatened environment.

Conflict of Interest

The authors declare that there is no conflict of interest.

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