Community-based shared values as a ‘Heart-ware’ driver for integrated watershed management: Japan-Malaysia policy learning perspective

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S U M M A R Y

This paper explores the case for using “community-based shared values” as a potential driver for the “Heartware” aspects of governance in Integrated Watershed Management (IWM) – from a Japan-Malaysia policy learning perspective. This policy approach was originally inspired by the Japanese experience, and the paper investigates whether a similar strategy can be adapted in the Malaysian context-based on a qualitative exploratory case study of a local downstream watershed community. The community-based shared values are categorized into six functional values that can be placed on a watershed: industry, ecosystem, lifestyle, landscape, water resource and spirituality. The study confirmed the availability of a range of community-based shared values in each category that are promising to drive the heartware for integrated watershed management in the local Malaysian context. However, most of these shared values are either declining in its appreciation or nostalgic in nature. The paper ends with findings on key differences and similarities between the Malaysian and Japanese contexts, and concludes with lessons for international transfer of IWM heartware policy strategies between the two countries.

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1. Introduction

Japan-Malaysia bilateral relations received its major impetus in February 1982 when Malaysia introduced the “Look East” policy, which designated East Asian countries, especially Japan, as a role model for socio-economic development (Furuoka, 2007). Japanese culture and value system were highly regarded, especially in the area of work ethics, efficiency, discipline, patriotism and cleanliness (Borneo Post, 2012). Although the most significant impact of the Look East policy is on techno-economic catching-up, the Japan-Malaysia bilateral relationship has also raised national awareness and commitment in environmental protection and conservation – resulting in the establishment of various cooperative and capacity-building programmes on environmentally sustainable development. This is in line with the Japanese government’s aid emphasis on environmental conservation since the 1980s, and its willingness to assist conservation efforts in the developing world (Potter, 1994), including Malaysia.

Due to this long-standing bilateral relationship, it is imperative for decision makers to understand how policy strategies can be better transferred and adapted from Japan (as an advanced country) to Malaysia (as a latecomer country). The term “latecomer” here is not only reserved for the more conventional notion of a country striving to catch-up in economic growth and industrial development (Fagerberg and Godinho, 2005) but also in sustainable development i.e. the convergence between economic growth, social welfare and environmental protection. Investigation on the former is well-established following heightened interest by scholars of development and innovation studies on the economic and technological miracles of East Asia (Freeman, 1987; Hobday, 1995). However, very little study has been done on the latter. Sustainable development will be an important policy concern due to the impending threat of climate change, increased global awareness on environmental conservation and inclusive development, and more concretely, the future implementation of the UN Sustainable Development Goals and post-2015 Development agenda. This is also crucial from a regional standpoint, as there is a growing
concern that Asia, as the fastest growing region, will be the main source of environmental degradation in the coming decade (Berkhout et al., 2009).

This paper attempts to provide a critical reflection on this process of Japan-Malaysia policy learning based on the experience of the Asian Core Programme on “Risk-Based Asian Oriented Integrated Watershed Management (ACP-IWM)”, a 5-year Japan-Malaysia research consortia funded by the Japan Society for the Promotion of Science. The consortium members consist of researchers from a number of universities in Japan and Malaysia, across various disciplinary backgrounds.

The selection of IWM as a focal area for research collaboration and policy learning between the two countries is indeed timely and appropriate. The percentage of polluted rivers in Malaysia has increased significantly since the 1980s, with more than half of the rivers polluted. Sources of pollution in Malaysia include high sediment loads from construction and deforestation, large quantities of litter and rubbish, untreated sewage, plus effluents from agricultural, industrial and commercial activities (Asian Development Bank 2007, in Tortajada (2014)). On the other hand, Japan has built a global reputation for successful conservation and restoration of its wetlands and rivers (Nakamura et al., 2006; Takashi and Uitto, 2004). In stating this, it is also important to acknowledge that Japan’s deeper commitment to environmental conservation and restoration took place after a history of environmental catastrophes in the early- and mid-20th century. This includes the big four pollution diseases (Gomez, 2008) and the 1977 red tide outbreak of Lake Biwa, Japan’s biggest natural lake (Noguchi, 1992).

One of the key factors behind the persistent problem of river degradation in Malaysia is related to the issue of good governance in the country’s IWM scenario (Chan, 2012a; Moorthy and Jeyabalan, 2012). ‘Governance’ in the context of the ACP-IWM programme has been defined more inclusively as a gradual, continuous and holistic process of short, medium and long-term decision-making that takes into consideration the on-going conflicts, competition and resolutions between various groups that have a stake on a watershed. Under this definition, good governance would not only require the conventional aspects of ‘HARD-ware’ (technology & instrumentation) and ‘SOFTWARE-ware’ (rules and regulation), but also the aspect of ‘HEART-ware’ to direct and sustain the governance process more effectively. This paper contributes to an exploration of this heartware approach.

As will be described in detail later, ‘heartware’ is still a working concept and was initially introduced to the ACP-IWM by one of the lead consortium members from Japan. However the concept has been embraced by the ACP-IWM consortium members due to their interdisciplinary nature and cross-national appreciation in tapping into Asian-oriented community spirit, local knowledge and cultural-religious traditions. The word “heart” resonates naturally between the consortium members when it was first suggested, and heartware was enthusiastically accepted as a conceptual framework – albeit with the lack of definitive operational definition. This opens up a unique space for a more organic Japan-Malaysia cross-national policy-learning.

It is in this collective spirit that a group of researchers under the ACP-IWM programme has embarked on a 2-year joint investigation into how far a Japanese inspired Heartware approach can be adopted into the Malaysian context. This paper will report current insights gained through an exploratory case study project in Mukim Pasangan Kuala Selangor, a local downstream watershed community in Malaysia. The area is internationally well-known for its firefly ecotourism attraction, but lacks community participation in watershed management. The inspiration behind this investigation was the watershed communities in Japan that have successfully translated their “community-based shared values” to drive the heartware for IWM in their respective areas.

This article consists of five sections. Section Two reviews the concept of heartware and community-based shared values in IWM. Section Three explains the research approach and methodology used in the case study. Section Four describes the findings. Section Five provides the discussion and concludes this article.

2. Heartware and community-based shared values

2.1. Heartware as a conceptual framework in IWM

From a sustainability science perspective, good governance may require plans that go beyond conventional scientific analysis. While the importance of science in preserving the natural environment cannot be disputed, the destiny of a watershed may not depend on scientific and technological knowledge alone, but also in carefully dealing with the diversity of non-tangible values that humanity places on nature and their complex relationship with each other. In reality water management plan typically do not include or usually underplay this often-indescribable character of society. One result of this deficiency is that environmental conditions continue to decline on a global scale in the face of management planning based only on the supremacy of science and technology (Beauregard et al., 2014; ILEC, 2014). To this end, the budding notion of ‘heartware’ has emerged in the practice of IWM. The term meant to contrast past achievements in ‘hardware’ and ‘software’ in a manner that also considers the overriding importance of human agency – and recognition of its historical, cultural, anthropological and even religious implications (ILEC, 2014).

Specifically, Heartware in this paper refers to the more subjective, nebulous and humanistic dimension of IWM that taps into the collective willingness of different stakeholders to continuously “collaborate” in solving complex problems for the attainment of a more sustainable integrated watershed management. Its purpose is to foster the foundation for continuous social learning and collaboration through the inclusion and acknowledgement of stakeholders’ values and perceptions; promote meaningful dialogue and constructive exchanges; develop a mutually-accepted and well-informed course of action – which (ideally) will lead to reduced conflict and increased trust among stakeholders as they move to the next cycle of decision making. A good heartware foundation will begin an upwardly spiralling process towards effective and mutually acceptable solutions that are more politically sustainable in the long run (Fig. 1) (ILEC, 2013; Silva, 2014a, 2014b).

Within IWM, the concept of Heartware was first introduced into the Integrated Lake Basin Management (ILBM) Platform Process, a governance approach that focuses on lentic waters led by the International Lake Environment Committee Foundation (ILEC). ILEC is a public interest incorporated foundation/NGO based in Japan. It was established in 1986 to promote the sustainable management of lakes and their basins, in collaboration with worldwide counterparts from the academic, administrative and private sectors (ILEC Website, 2015). ILBM is an approach developed by ILEC to achieve sustainable management of lakes and reservoirs through gradual, continuous and holistic improvement of basin governance, with emphasis on the dynamic integration between six ILBM pillars: institutions, policies, participation, institutions, information, technology and finance. A 2014 ILEC report by Nakamura and Rast provides a detailed description on this ILBM Platform process.

Lessons gained after fifteen years of developing, implementing and refining the ILBM globally has led to a critical realization that long-term stakeholder collaboration is the foundation behind most
Successful cases of lake management. “Heartware” is an emergent concept based on this organic realization by ILBM practitioners. According to Masahisa Nakamura, the founder of the ILBM framework and a previous Chairman of ILEC, the term heartware was inspired by Harashina (1996) where it was initially used as the third leg of effective environmental planning – in addition to hardware and software approaches. Here, Harashina argued that societies need to create more responsible habits, and advocate a variety of what they call “heartware” approaches to sensitize and educate them. ILBM scholars then adopted the terminology to conceptualise similar concerns on the non-tangible and catalytic dimension of human agency and cooperation in lake management, and have been refining the concept through a series of ILBM Heartware Expert Group Meetings held every year since 2012. The working definition used in this paper is based on our own understanding of the concept, building on previous work by ILBM scholars (ILEC, 2013; Silva, 2014a, 2014b).

Important to note that the appreciation of the Heartware concept within ILBM, especially from the community-based perspective, is also influenced by the work of Yukiko Kada, a well-known Japanese environmental sociologist and a close associate of ILEC. This includes her ideas on life environmentalism, near water, far water and local wisdom (Kada, 1999, 2006). Kada’s work was fundamental in highlighting that Heartware qualities are already imbedded in the culture, tradition and behavioural norms that have evolved in the life of ordinary people in Japan. The importance is to facilitate the Japanese communities to see these as valuable, and to re-identify with these fading/faded local cultures as a way to enhance current efforts in environmental conservation. When Kada became the governor of Shiga prefecture in 2006, she played a fundamental role in incorporating local community perspective more tangibly in the governance of Lake Biwa, the largest natural lake in Japan – particularly through her leadership role in the development of Mother Lake 21 Plan (Kada, 2003), a visionary prefecture-level policy guideline on the conservation and improvement of Lake Biwa.

Other than the work by Harashina (1996), it is unclear how far the term ‘heartware’ has been used beyond the ILBM and ACP-IWM epistemic community. However through its broad definition, one can generally see that the concept can provide a useful umbrella conceptual framework to a number of related concepts and approaches already used in the broader IWM literature that focuses on the role of human agency – such as value focused thinking (Merrick and Garcia, 2004), traditional/local ecological knowledge, adaptive management, co-management (Olsson and Folke, 2001), social learning (Mostert, 2008) and catchment volunteering/volunteers (Gooch, 2003).

2.2. Shared-values

One of the main heartware challenges is the process of mediating different prioritization of values placed on the watershed by different stakeholders (Water and Culture Institute, 2012). This is because the complexity of decisions about how best to improve a watershed can be conflicting, as stakeholders often have varying viewpoints about what is important in managing a watershed, and about the projected outcomes and consequences of actions taken. According to Hirayama et al. (2011), these shared values can be categorized according to the major functions of a watershed (in this case, a lake) to human life (Table 1).

A possible way forward in this process of mediation is to use a value-focused thinking i.e. by starting from the prioritization of values that are more commonly shared by different stakeholders. “Shared values” can be used to solidify a community’s sense of vision, trust and engagement with each other, and drive them to cooperate towards a common goal – hence providing a stronger basis for social/collaborative learning and adaptive co-management in IWM (Chandrasekera, 2004).

As suggested by the “House Model” by Fisher (1993, cited in Chandrasekera (2004)), agreed rules, shared values and shared

<table>
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<tr>
<th>Types of value</th>
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<tr>
<td>Water resource</td>
<td>Water resource for domestic, agricultural, industrial use, flood control</td>
</tr>
<tr>
<td>Ecosystem</td>
<td>Habitat of plants and animals</td>
</tr>
<tr>
<td>Landscape</td>
<td>Beautiful range of mountains and vegetation, swimming waterfowl</td>
</tr>
<tr>
<td>Lifestyle</td>
<td>Leisure, food culture, traditional festivity, education</td>
</tr>
<tr>
<td>Industry</td>
<td>Fishery, lake transport</td>
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behaviours can be seen as an institutional base (the walls of the house). This base, or walls, must always be present as there must always be agreed rules and shared behaviours – or nothing will happen in terms of collective action. The roof of the house represents an “organizational superstructure” made up of roles such as committee members, chairpersons, or watershed volunteers. This superstructure can be different in shape in different cases and may sometimes be missing. In promoting community participation, the walls are essential. The roof cannot be built without the walls, and is not always necessary.

However in practice, especially in international policy transfer, emphasis is often placed on building the roof but with less effort expended in building the walls needed to support the roof for the long-term. Therefore, when transferring successful participatory approaches (i.e. the roof) in environmental conservation that have been successful in countries like Japan, we also need to realistically consider their unique community dynamics and deeply ingrained environmental ethics (i.e. the walls) that are prevalent in the Japanese contexts (Takashi and Abe, 2001). In IWM for instance, Japan’s success can be unique due to a number of factors: smaller watershed topography leading to closer physical interaction between upstream and downstream communities, collective decision-making practices from its rice-growing culture and the historical prevalence of grassroots movements in watershed conservation (Nakamura et al., 2006). Due attention to the walls and not merely the roof is one of the ways to avoid the perils of ‘one-size fits all’ approach in watershed management (Shindler, 2000; Wells and McShane, 2004).

2.3. “Community-based shared values” as a driver for Heartware

A World Bank study by Kemper et al. (2007) pointed to the need for decentralization in decision-making and active involvement of stakeholders in river conservation – the assumption being that decisions taken by and with stakeholders would be better informed and therefore can improve negotiation among stakeholder groups to achieve more rational and equitable solutions. Such processes might also lower resistance to sometimes difficult decisions. One possible success factor is the use of “community-based shared values” to drive the heartware of IWM. The study have demonstrated that a more nuanced understanding, recognition and nurturing of shared values at the community level could improve long-term stakeholder participation and collaboration in IWM, and contribute to more effective and targeted strategies. McGinnis et al. (1999) even argued that the lack of a sense of community may be the single most important barrier to successful long-term watershed planning and implementation.

Through a number of study visits under the ACP-IWM programme and relevant literature review we were made to realise that Japan, in particular, can provide a good inspiration for using community-based shared values to drive the heartware. We observed that elements of community-based shared values such as local traditions, folk stories, unique sense of local community, citizen volunteerism, historical memories of human–nature relationship and landscape appreciation have contributed to proactive, long-term citizen participation and stakeholder support in the protection of watersheds. A clear example is the significant role of local communities in the conservation strategy of Lake Biwa (Ike, 2005; Nagai et al., 2014; Suzuki, 2014; Shimagami, 2014; Takahama, 2014) and the explicit inclusion of community-based shared values (Box 1) in the Mother Lake 21 Plan policy document. For a more comprehensive reading of the Japanese heartware experience in IWM, one can refer to the work of Yukiko Kada (mentioned earlier) and others (Takashi and Uitto, 2004; Watanabe, 2011; Nakamura et al., 2012).

Indeed, the significance of the heartware approach in the Japanese environmental management experience in not only limited to IWM. As highlighted in a 2005 World Bank Report entitled “Local Approaches to Environmental Compliance: Japanese Case Studies and Lessons for Developing Countries” (Bianchi et al., 2005), effective responses to environmental compliance in Japan have often required consensus and commitment at the local government and community level. Even though Japan is as much a top-down decision making structure nation as a country like Malaysia – in almost all cases of major environmental initiatives, decision-making was made at the local level transcending to the national level, with strong voices coming from local experiences involving citizens and other affected populations. This includes considerations of community-based shared values pertaining to local beliefs, tradition and culture.

In the context of the Malaysia’s IWM, centralization is the main strategy for governance (NAHRIM, 2013) with less emphasis on decentralized approaches to balance things out (LESTARI, 2013; Chan, 2012b). Indeed, dominance of state power in the governance of water management is a starting point for IWM in most developing countries, but this approach would often not work well and will not produce the desired results if it remains static and non-inclusive in the long run (Kemper et al., 2012). In Malaysia for instance, centralized governance strategies have been successful in introducing new technological solutions and setting-up of formal organizations, policies and legislation for IWM. However, these hardware and software strategies are increasingly weakened through poor cooperation and integration between the federal and
state governments, between different state governments, and between state and local governments. As argued by Chan (2012a), centralized strategies have led to the overlap of responsibilities, competition, and disputes in river management – leading to persistent problems in enforcement, and reduced stakeholder dynamism in dealing with on-going challenges facing the watershed. These problems persist even after the introduction of ambitious policies by the Federal Government, such as the National Water Policy and National Water Resource Policy in 2004 and 2012, respectively.

Such observations echo the findings of a 2012 study by Moorthy and Jeyabalan, where they concluded that despite the holistic coverage of the National Water Policy, there are apparent problems with regard to the jurisdiction, legislation and coordination initiatives that have resulted in the poor management of water resources in the country. The study therefore postulates that, “in addition to better coordination between water related agencies and more cohesive water legislations structures, it is fundamental to infuse the knowledge of ‘water ethics’ among water managers, institutions, the general public and into water policy formulation and implementation initiatives”. Chan (2012b) also explicitly suggested that the best way forward is to enhance and increase stakeholder involvement. In a nutshell, both articles highlighted the persistent problems of ‘heartware’ in the country’s handling of IWM. Such assertion though, cannot be fully generalised across the board. There has been promising local cases, such as the success of the community-based Tagal system in the State of Sabah (Er et al., 2012) that has been exemplary in sustaining long-term community participation and stakeholder cooperation in river conservation. Such cases, although rarely documented, highlights the potential of community-based approaches to help improve the current handling of the heartware aspects of IWM in Malaysia. This prospect can be explored further.

3. Research rationale and methods

Watershed governance is a highly political issue, and can be easily dominated by vested interests. Thus, while decentralised or participatory decision-making has the potential to improve IWM in Malaysia, there are social and political tradeoffs that need to be taken into account in its implementation. For this reason, the question of when and why decentralised strategies can work in practice, or why they do not work, is of major practical relevance (Kemper et al., 2007). From a heartware perspective, identifying the motivation behind long-term cooperation by key stakeholders in dealing with on-going challenges facing a watershed is of utmost importance. Inspired by the Japanese experience, building from and rooting this motivation in “community-based shared values” could be one of the ways forward.

Although inspiring, the applicability of using the heartware lessons gained from a country like Japan is highly contextual. It can be hypothesized that the significance of the community-based shared values identified in many Japanese watershed communities may not be directly applicable to Malaysia. Historical context, income level, economic priorities, political culture, religious beliefs and socio-cultural diversity (Table 2) are some of the characteristics that may differentiate the heartware tendencies between Malaysian and Japanese communities. As mentioned before, Japan has a unique socio-ecological, socio-economic and cultural history that has shaped its IWM practices to date (Nakamura et al., 2006).

In this regard, although one can take inspiration from the Japanese Heartware approach, it is still very important to first understand the extent to which such heartware lessons can be useful when applied within the Malaysian context. This paper explores this potential further, based on evidence collected from a 2-year exploratory case study research at a downstream watershed community in Malaysia.

3.1. Exploratory case study: Downstream watershed community of Mukim Pasangan, Kuala Selangor

Kuala Selangor is one of the nine districts in the State of Selangor, Malaysia. “Kuala” means rivermouth in the Malay language, and Kuala Selangor is a small town where the Selangor River (Sungai Selangor) meets the sea. Kuala Selangor is also a heritage area, being the old royal capital of Selangor during its earliest settlement period in the 16th century. Mukim Pasangan is a sub-district within Kuala Selangor that is made up of six villages.

The area particular is well known for its unique species of synchronised fireflies (Pteroptyx tener) and has generated worldwide interest. There is exhaustive literature on the fireflies of Kuala Selangor, especially on their ecology (Nallakumar, 2003), conservation efforts (Nada et al., 2012; Hussein and Mohamed, 2007) and ecotourism potential (Shawahid et al., 2013). Scientific research and firefly conservation programmes are also frequently conducted by various universities, NGOs, research institute and CSR division of firms. However, there is very little understanding on the human–nature relationship of the watershed community itself. Even the community leaders expressed their disappointment on the lack of attention given to other inspiring dimensions of the watershed area as whole, beyond this narrow interest on the fireflies.

In a broader watershed perspective, the state of Selangor is one of Malaysia’s richest states, but the problem of river pollution is one of the worst in the country. The degradation of the river water quality could be linked to recent changes in land use within the Selangor River Basin, especially with regard to agricultural activities, urban development, pollution, municipal waste, industrial waste, and adverse impact of the upstream Sungai Selangor dam (Fulazzaky et al., 2010; Jaafar et al., 2009).

In terms of hardware and software, Selangor was set to lead the way through the pioneering establishment of Lembaga Urus Air Selangor (LUAS) in 1999, the only dedicated agency of its kind in the country to be responsible for state-level integrated river basin management (IRBM). Historically, the establishment of LUAS as an

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<td><strong>Comparison of socio-economic contexts between Malaysia and Japan. Source of data: CIA Worldfact Book</strong></td>
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<tr>
<td><strong>Status</strong></td>
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<tr>
<td>GDP per-capita</td>
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<td>$24,500 (2014 est.)</td>
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<td><strong>GDP (PPP)</strong></td>
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<td><strong>Population</strong></td>
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* Total adherents exceed 100% because many people belong to both Shintoism and Buddhism (2005).*
organisational ‘roof’ was based on an IRBM project cooperation between the Government of Malaysia and Denmark in the 1990s. The purpose of the project was to work with different IRBM institutional approaches for two of Malaysia’s main river basins i.e. Sungai Selangor and Sungai Kedah. Selangor established a new organisation, LUAS, with its own enactment for water resources management, while Kedah employed a more informal approach with an inter-agency committee chaired by the State Economic Planning Unit. Community and stakeholder participation is one of the key aspects of the IRBM approach (Abdullah, 2002).

However a study conducted by Khalid et al. (2012) has shown that the effectiveness of the agency to mobilize IRBM in Selangor remains problematic. Pre-LUAS problem of Federal-State and State–State jurisdiction over water resources management continues to be a complex and sensitive issue, while the integration of water-related departments’ activities is progressing slowly. The study also highlighted that the lack of understanding of the IRBM concept among the officers in water-related authorities, and the constitutional conflict in water jurisdiction have contributed to unsuccessful implementation of IRBM by LUAS in Selangor. Through a conversation with a LUAS representative, it was also clear that the participatory approach promoted in the IRBM approach was not easily implementable. He admitted that the organisation lack necessary resources and capacity to maintain long-term trust and collaboration with local communities. Most of LUAS’s engagement programmes, to date, are more short-term and ad-hoc in nature.

In this regard, the case of Mukim Pasangan downstream community is very interesting in terms of the potential of its ‘community-based shared values’ to drive the heartware for Sungai Selangor. Even though the Sungai Selangor watershed exemplifies some of the cumbersome politicising and lack of participatory approach that characterises the IWM scenario in the country, it also offers an aspirational potential due to the long-established shared-values held by many stakeholders on the conservation of fireflies. In addition, during the pilot study of this research, we also detected various dimensions of community-based shared values that have yet to be unearthed.

This opens up the question of whether the Mukim Pasangan watershed community has the potential, like its counterparts in Japan or Tagal in Sabah (as described earlier), to play a bigger role in IWM if more of its community-based shared-values are identified, nurtured, communicated and shared as an inspiration to the watershed stakeholders. Can it be used as a stronger foundation to enhance the heartware for Sungai Selangor? This is the long-term thesis of the research. As for this paper, the modest objective is twofold: (1) to ascertain whether “community-based shared values” for the Selangor River watershed exist within the community of Mukim Pasangan, and the form it takes; (2) to gauge the potential of the identified community-based shared values (if any) as a heartware driver for IWM.

### 3.2. Appreciative inquiry

The research has applied the appreciative inquiry (AI) approach as a proactive strategy to uncover elements of shared values for this paper. The appreciative inquiry refers to an organizational and social change approach that identifies peak moments within a community and reinforces conditions that have made past achievements possible (Cooperrider and Srivastava, 1987). AI has also been described as:

> … the cooperative co-evolutionary search for the best in people, their organizations and the world around them. It involves the discovery of what gives life to a living system when it is most effective, alive and constructively capable in economic, ecological and human terms. AI involves the art and practice of asking questions that strengthen a system’s capacity to apprehend, anticipate and heighten positive potential. The enquiry is mobilized through the crafting of the “unconditional positive question […] AI interventions focus on the speed of imagination and innovation – instead of the negative, critical and spiraling diagnoses commonly used in organizations. The discovery, dream, design and delivery model links the energy of the positive core to changes never thought possible (Cooperrider et al., 2003).

Instead of starting at the level of key problems, the AI framework known as the “The 4D Model” (Fig. 2) starts by appreciating the process of “Discovery” – where researchers try to discover the best moments and memories in the history of the community and its people. The second stage “Dreaming”, builds on these exceptional life moments to envision what the community could be in the future. Then the framework moves to the more practical phase of “Designing” the future envisioned by the community themselves, and finally, to agreeing on each person’s role for the “Delivery” phase. As highlighted by Hammond (1998), AI helps a community to “journey into the future, while carrying the best parts of the past”.

Hence, AI is a suitable tool to discover inspiring shared values appreciatively from the ground up, and to highlight these values as a way to assist decision makers to approach the governance of IWM in a more inclusive, visionary and proactive manner. In principle, by highlighting values that are not only shared but also inspiring in their genesis, the study has more potential to come up with findings that could encourage proactive and creative participation and innovation by the community in the subsequent dreaming, designing and delivery phases of AI. Indeed, the AI approach differs from the more neutral approach that focuses on mere identification and categorization of people’s values (Hirayama et al., 2011) or the problem-solving approach that focuses on the problematic side of public participation in IWM (Chan, 2012a; Khalid et al., 2012).

#### 3.3. Data collection and analysis

The research uses a semi-structured and open-ended interview as its main method. The interview protocol was crafted using the
appreciative inquiry approach, as described earlier. The interview was conducted in the local language (Bahasa Malaysia) and the interviewees consist of focus groups representing key groupings in the community: ketua kampong (village leaders), boatmen, educators, youth, women, village elders, cottage industry entrepreneurs and religious group (Hindu & Islam). The identification of key groups was based on information gathered from publicly available socio-economic data and consultation with the village chief.

In total, the interview covered approximately 40 key respondents. Selection of respondents was based on homogeneous sampling, where people of similar backgrounds and experiences were brought together for the interview. This type of sampling reduces variation, simplifies analysis, and facilitates group interviewing. Final sampling of the focus group interview however was dependent on the availability and willingness of the identified respondents to participate. Some of the villagers were quite shy to express their opinions in groups. This was resolved by conducting door-to-door interview with key respondents who were missing. Findings from the interviews were also triangulated with those gained from documentation analysis (articles, reports, brochures, old pictures), direct observation and informal conversation with the villagers. Important to note that two categories of the focus group i.e. village elders and cottage industry entrepreneurs, were identified later in the research as their significance as a focus group emerged from the on-going data.

The research for this paper however is only limited to the “Discovery” phase of the appreciative inquiry framework, rather than the whole 4D Cycle. This is because the research goal is to identify the shared values that can be used as elements to support the heartware process, rather than to conduct the process itself. Our intention is to ‘be a part of, rather than ‘creating’ a cycle of social change’, at least for the present period of the research. However, the long-term vision of this research could be extended to help the community to complete the cycle.

Hence, the interview questions would need to be centered on the key elements of the Discovery phase: appreciating “the best of what is” within the community and how this could translate into positive attitudes and behaviours to enable more effective IWM in the Sungai Selangor watershed. With this orientation as guidance, a list of IWM issues in Mukim Pasangan was identified and these were then developed into appreciative questions. The approach of focusing on the Discovery phase is similar to the work done by Michael (2005) in using AI to discover the power of 60 local African NGOs and using the findings to improve their roles in Africa.

The whole interview was fully recorded using a voice recorder, and visually captured using a camcorder and camera. The findings of this research were then presented to the community for verification at the end of 2013. The findings were refined through further immersion in the community via three translational research projects during the second year of the research. This includes: (1) Citizen Science Nature Club: the shared-values were translated into various citizen science activities for the community, especially the youth; (2) Mosque Water Appreciation Awareness Programme: the shared values were used as the local appreciative content in the programme; (3) Coffee Table Book: detailed voices of the community were captured through a series of in-depth interviews and closer social interaction with the community. Compared to the more arms-length approach of the first phase, the second phase of the research was more participatory and organic in nature. The building of trust between the researchers and the community from this process of action-oriented research allowed deeper understanding on the significance of the community-shared values – not only in terms of its collective expression and appreciation, but also its potential to be re-enchanted further as a source of heartware in the future.

4. Results

From this exploratory research, we have identified a number of community-based shared values that have been appreciatively expressed by the downstream community of Mukim Pasangan. Table 2 categorizes these community-based shared values according to the functional categories described earlier in Table 3. The relative significance of these shared values, as expressed by the local community is analysed based on how far they were expressed as significant (according to frequency and depth of expression) by members of the community.

- High: expressed significantly by most community members.
- Low: expressed significantly by one or very few members of the community.
- Declining: expressed as significant in the past, but losing significance at present.
- Nostalgic: expressed to be only significant in the past.
- ‘‘: Only expressed by the elders.

Each of the shared values will be elaborated on accordingly. The paper will then discuss how these findings can provide early indication on how far the “community-based shared values” have the potential to drive the heartware of the Mukim Pasangan watershed community. It will then conclude with our resulting insights on the opportunities and challenges for cross-national policy learning in this area between Japan and Malaysia.

4.1. Value of industry

The Kg. Kuantan Firefly Park (KKFP) has been a mainstay industry for the Mukim Pasangan watershed community for three

<table>
<thead>
<tr>
<th>Functional categories</th>
<th>Sub-categories</th>
<th>Relative significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industry</td>
<td>Ecotourism: Firefly tour</td>
<td>High</td>
</tr>
<tr>
<td></td>
<td>Freshwater fishery</td>
<td>Declining</td>
</tr>
<tr>
<td></td>
<td>Artisan: Nipah/ribunga roofs; Boat making and woodcarving; Nibong cutlery</td>
<td>Low</td>
</tr>
<tr>
<td></td>
<td>Food: Nipah casing for local delicacy</td>
<td>Low</td>
</tr>
<tr>
<td></td>
<td>Ecotourism &amp; artisan: Selling of handicrafts</td>
<td>Nostalgic</td>
</tr>
<tr>
<td>Ecosystem</td>
<td>Fauna: Fireflies</td>
<td>High</td>
</tr>
<tr>
<td></td>
<td>Flora: Berembang mangrove</td>
<td>High</td>
</tr>
<tr>
<td></td>
<td>Fauna (others): Freshwater fish, crocodile, prawns</td>
<td>Declining</td>
</tr>
<tr>
<td></td>
<td>Fauna (others): Edible riverine plants, Nipah, Rumbia</td>
<td>Declining</td>
</tr>
<tr>
<td></td>
<td>Local knowledge on flora, fauna and natural processes</td>
<td>Low</td>
</tr>
<tr>
<td>Lifestyle</td>
<td>Direct use of natural resource</td>
<td>Declining*</td>
</tr>
<tr>
<td></td>
<td>Space to play</td>
<td>Declining</td>
</tr>
<tr>
<td></td>
<td>Transportation</td>
<td>Nostalgic*</td>
</tr>
<tr>
<td>Landscape</td>
<td>Artistic inspiration: Music, poems and chantings</td>
<td>Low*</td>
</tr>
<tr>
<td></td>
<td>Connection to the river landscape</td>
<td>Declining*</td>
</tr>
<tr>
<td>Spirituality</td>
<td>Hinduism: River for ritualistic cleansing and purification</td>
<td>High</td>
</tr>
<tr>
<td></td>
<td>Local reverence (adab) for the spirit of nature</td>
<td>Declining</td>
</tr>
<tr>
<td></td>
<td>Hinduism: River as religious inspiration</td>
<td>Low</td>
</tr>
<tr>
<td></td>
<td>Islam: River as religious inspiration</td>
<td>Low</td>
</tr>
<tr>
<td></td>
<td>Islam: River for ritualistic cleansing and purification</td>
<td>Nostalgic</td>
</tr>
<tr>
<td>Water resource</td>
<td>Direct use of water</td>
<td>Nostalgic*</td>
</tr>
</tbody>
</table>
generations. The industry provides significant income-generating opportunities. Locals work as pendayung (boat rowers) and tour guides for visitors to witness the spectacular showcase of the P. tener fireflies. From funds provided by the State Government, the District Office developed a proper visitor complex complete with ticketing booth, handicraft and exhibition centre, food stalls, public toilet and parking area. Visitation is all year round and the number of visitors has been rising over the years, from an estimated 24,000 in 1995 to 40,000 in 2010. Visitors comprise both local and international tourists, either in organised tours or on independent visits. KKFP began as a community-based ecotourism, but a large part of its management has now been taken over by the district office. The community, at present, is only in charge of transporting and guiding the tourists to observe the fireflies.

Other sources of income can also be easily obtained from the rich riverine flora and fauna. Parts of the riverine palms can be used to make pillars and roofing for traditional houses, food packaging and local handicrafts. The community was also known for its sampans (traditional boat) making craftsmen. Although the locals admit that such cottage industry activities may not make very profitable business, many continue the tradition to sustain their culture, and to generate side income for their families. Interestingly, the roofing and food packaging business is gaining popularity in recent years due to increasing demand for natural materials. Freshwater fishery (fish and prawns) also used to be a lucrative business in the past, but is now reduced to a mere side income and recreational activity. The decline is mainly due to the depleting population of freshwater fauna in the river, plus the lack of interest from the younger generation to be involved in fishing activities. Most prefer white- and blue-collar jobs in the urban areas.

4.2. Value of ecosystem

The Selangor River has been blessed with the growth of berembang mangrove trees as the main source of food for its world-famous fireflies. The populations of fireflies and berembang mangrove are still retained due to many conservation efforts carried out. Fireflies, once common throughout Peninsular Malaysia, have now been reduced to very few locations throughout Peninsular Malaysia (Nallakumar, 2003). Hence, the ones remaining in Kuala Selangor are popularly considered as a national treasure.

Before the fireflies gained their popularity, this downstream watershed area was known for its freshwater fish, prawns and crocodiles. Over the years, these faunas have suffered greatly from human activities such as overfishing, oil palm plantations along the river banks and salt water intrusion after a dam was built upstream. The locals also expressed their concerns about riverbank erosion. They observed that rapid structural changes of the river (due to overdevelopment) have caused greater erosion to the river banks, leading to increased turbidity, lower water quality and reduced population of certain freshwater fish. This was clearly expressed by a local boatman:

“Do you see the forest at the other side of the river? There were many large trees before people started to exploit this area. When they started sand mining activities in areas upstream, it has impacted us negatively. Now it gets hotter and the fish population has declined”.

In terms of local wisdom, the village community has deeper experiential and historical knowledge about the river ecosystem and its natural processes. They possess unique insights regarding dynamic changes of the Selangor river geomorphology, bio-indicators of healthy river ecosystem, palatability of different types of prawns and fish and unique know-how on freshwater fishery.

4.3. Value of lifestyle

In the past, the locals directly utilised river for everyday use. Riverine plants were abundant and had many everyday uses: from providing ingredients for food, to making kitchenware using the leaves. Some of the older housewives are still adept at utilising these plants to make traditional delicacies. The river water could also be used directly as drinking water only by basic filtration using mineral salt. Up until the 1980s, before the advent of piped water supply to households, the locals used to bathe, wash clothes and drink directly from the river. Back when there were settlements on both sides of the river, the river was a major method of transportation. Most of the river households owned a sampan in the past. Villagers used to send their children to school using the sampans, forming a space for socialization and sense of community. A number of adults also remembered how the river was like a “playground” where they could go diving and enjoy swimming with friends. Local elders often talked about how easy it was to catch prawns and fish from the river just by using the hand or simple tools such as bamboo sticks. The younger generation still enjoys catching fish and taking baths in the river, but only in the smaller water channels. Increasingly, there is a big generational gap between grandparents and their grandchildren when it comes to their relationships with the river. Low water quality and fear of drowning began to drive people away.

4.4. Value of spirituality

The words “water” and “river” are no strangers in religious transcripts and teachings. In the Qur’an, heaven is described as a beautiful garden filled with lush greenery and flowing rivers. In Hinduism, the river is considered sacred and worshipped by Hindus who believe that by bathing in the river they are cleansed of sin and freed from the karmic cycle of rebirth. These were expressed by some of the religious leaders in the community. Locally, reverence for the river is influenced by customs and traditions. Every year, devout Hindus of Mukim Pasangan would perform ritual cleansing using river water during the Thaipusam celebration. However, due to the declining water quality, the Hindu devotees at present will only go to the river as a symbolic gesture, while the actual cleansing is done with piped water. The ritualistic Mandi Safar (Safar Bathing) was also once practised at the river by the Malay-Muslims of Mukim Pasangan, to ward off misfortune during the Islamic month of Safar. Interestingly, the biggest mosque in this community was built next to the river. In the past it was a norm for the Muslim community to take their wudu’ (ablution before prayers) directly from the river. Today, with the arrival of piped water, this is no longer practised.

As an expression of their respect for nature, there are adab (gesture of respect and politeness) that this watershed community have maintained until today. For example, to show respect, some local folks believe that by asking permission from crocodiles or river spirits before entering the river, no harm will befall them. For example, they would say: “Salute, Grandfather. Please allow your grandchildren to pass through the river to look for food...” before entering into the river. One must also behave respectfully when entering the river. It is a part of the adab to never catch freshwater fish and giant prawns in excess and the juvenile fish or prawns are always released back into the water. Such adab ensured the population of the freshwater fish and prawns are always sustained. However, cases of overfishing, especially upstream, have caused uncontrolled depletion downstream.

Some villagers, both young and old, have also demonstrated their passion for the river by working as pendayung (rower). Taking the tourists by using a sampan is one of the ways to ensure that the river will not be heavily polluted as compared to using motorized boats. Indeed, this is the uniqueness of KKFP compared to the more
commercial firefly ecotourism areas nearby. The pendayung believe that quietly rowing a sampan in the dark night, instead of using boat engines and light, will not disturb the fireflies. They also respect the fireflies in their natural habitat; it is forbidden to take photographs or use torchlights as they are sensitive creatures. The pendayung have also raised various issues about the fate of the river as they have noticed the declining population of fireflies after a land clearing in 2008. The art of mendayung (rowing) is also considered by most as a unique skill that needs to be retained to the next generation.

4.5. Value of landscape and water resource

Compared to the other shared values, the value of landscape and water resource was only mentioned by the elders in the community. The older generation often reminisce about a different, more beautiful Selangor River landscape than what they can see today. Even though some of the elders no longer live near the river, the river is still in their hearts and minds. They expressed their longing for the river, especially since some of them are currently living in modern housing areas further from the river. Some of the old timers would also play the “dabus” (a traditional Malay musical instrument) while chanting religious prayers or singing traditional compositions about the environment, fireflies and history of the local community. However, this tradition is declining, as none of the younger generation has expressed interest in continuing it. Similarly, the shared value of “water resource” was only expressed by the elders as a value of the past, when water was taken directly from the river for everyday use.

5. Discussion

Evidence from the case study has shown that there are a number of community-based shared values that can be used to drive the heartware for IWM in the context of the downstream community of Mukim Pasangan. However from the five functional categories adapted from Hirayama et al. (2011), only two functions were expressed significantly by the community i.e. value of industry and value of ecosystem. Value of lifestyle is mostly declining and nostalgic, value of landscape is only expressed by the elders, and value as water resource entirely nostalgic. Interestingly, the case study has revealed ‘spirituality’ as an additional category of shared value that is still more or less prevalent in this Malaysian local context.

As expected, the value of “industry” remains strong due to the central position of KKFP. Members of the community still consider KKFP as an important feature of the area. They also recognise the interest and role of many stakeholders in this effort. However on the downside, KKFP is currently facing problems in maintaining environmental quality, site attractions and tourist facilities and services (Lim, 2010, cited in Shahwahid). Broader community participation in the creative development of KKFP has also declined since the management was taken over by the district office. For instance, the locals used to sell food and handicrafts at the river jetty, but this is no longer practised. Overall, the community feels that their sense of ownership to the industry has declined compared to the past. This is also reflected through the decline of other traditional handicraft industries in Mukim Pasangan, which could have been sustained if the community was much more integrated in the ecotourism business and market opportunities.

Another unique local issue is that the majority of the Hindu Indian community that lives further away from the river feels that they do not benefit from the river as most of the profit goes only to the pendayungs, who are all ethnically Malay-Muslims. This issue of ethnic polarisation is a common challenge for a country like Malaysia. In Japan, this may not be very prevalent due to the more homogenous nature of its community, be it in terms of ethnicity, religion and language (Table 3).

Likewise, in terms of “ecosystem”, shared-value on the ecological value of the fireflies and berembang mangroves remains high, with most members of the community expressing awareness of their significance. They also understand that the ecotourism industry will not be sustainable without sufficient efforts in conservation. However, there are also concerns on the lopsided attention to the fireflies and berembang compared to the conservation of other unique and declining riverine flora and fauna that can also be found in the area. This is similar to some of the frustration expressed towards the lack of attention given to the perspective of the local community and the inclusion of their local knowledge in conservation. Indeed this is important to recognise as local knowledge is invaluable for understanding the realities of day-to-day ecological changes, and its human–nature dynamics (Lipschutz, 1997). Even in Japan, participatory approaches in IWM consider local knowledge as an important part of the development of watershed conservation strategies (Kumagai et al., 2003, Brelet, 2004).

The absence of “water resource” as a shared value is interesting, in the sense that the community does not presently value the river as a source of water for their everyday use – even though stories about the Selangor River being a valuable source of raw water has become a hot topic in recent years. Expression of the river as a water resource was only discussed nostalgically as ‘near water’ culture in the past. This is contrary to the state’s vision of integrated river basin management where water use is closely interlinked with water resource (e.g. river) management (LUAS website, 2015). Without current appreciation by the local communities on this vital connection, it can be difficult to encourage citizen commitment to support this holistic water policy. However even from a cross-national perspective, this is proven to be an inevitable impact of technological development and industrialisation – due to the convenience of water supply systems being available in nearly all modern households. This problem is popularly known in Japan as the “near water, far water” dilemma (Kada, 1999; ILEC Newsletter, 2012), where affluent modern societies are increasingly taken away or disconnected from the real source of water as they develop economically – leading to the current generation becoming less appreciative of the real value of water bodies as a valuable natural resource. In response to these phenomena, there have been movements observed in Japan to remind the community of their water culture heritage through public education and the arts.

The Japanese community is well known to be generally appreciative of the landscape value of their environment (Saito, 2002; Heyd, 2002). This is contrary to the findings of this research, where landscape appreciation was only expressed by the oldest members of the community in Mukim Pasangan, mostly in the ‘past tense’. It is as though the present generation has lost their inspiration of the river landscape, probably due to the river’s declining water quality and their limited interaction with it. However the fact that landscape appreciation is still alive in the memory of the elders is promising, in that it can be re-awakened to the younger generation. Even in the more appreciative context of Japan, we have observed that inter-generational gap is also becoming an issue, and efforts are currently in place to reduce this gap.

In addition, nature-inspired artistic culture such as music, chanting, craft and dance that were more prevalent in the past are declining not only in Mukim Pasangan, but also in most Malay-Muslim areas in the country due to increasing religious restriction on any practices that may indicate the worshipping of nature or any form of pre-Islamic spirituality (Hoffstaedter, 1999; Brennan, 2001). This cultural trend is related to a broader debate on the country’s contemporary response to modernity, and its impact to race-relations, religion and politics. For instance, the rise of political Islam in Malaysia since the 1970s, has contributed to the leaning of Malaysian identity along religio-cultural lines and
increasing denial to the country's pre-Islamic past (Noor, 2004). This can be problematic as much of the country's artistic cultural heritage is rooted in Hindu, Buddhist and animistic traditional history, in addition to Islam. Despite being an uneasy topic, such a worldview needs to be honestly explored in terms of its impact to the development of environmental ethics in Malaysia, especially among the Malay-Muslims. This is particularly essential from a policy-learning perspective. Environmental commitment of a country like Japan must also bear in mind the foundation of her environmental ethics that are rooted in the artistic tradition of Zen Buddhism and Shintoism (Tanaka, 1984; Odin, 1991; Kagawa-Fox, 2010) – which in some respect, may contain elements that are contrary to the predominant local religious sentiments.

This is where the additional category of "spirituality" may provide a way forward. It was found that religion can play a significant role in enhancing shared values among the Muslim and Hindu communities of Mukim Pasangan. Although religious ritual are still rooted in practice, the significance of religious-based shared value towards the river has declined – but this may be easily revived due to the central role of religion in shaping the everyday lives of Muslims and Hindus. Indeed, for decades local academics have been theoretically exploring the potential role of religious traditions to enhance environmental practices and commitment in Malaysia (Sharifah Zaleha and Hezri, 2009). Perhaps it is time to test those ideas more practically on the ground. Other than religion, some members of the local community still practise local adab. But some of these practices, again, risk being labelled as a form of irreligious superstition and are often discouraged.

6. Conclusion

This paper has demonstrated that the local watershed case of Mukim Pasangan has the potential to adopt the Japanese-inspired "community-based shared values" strategy to drive the heartware of IWM for the Selangor River watershed – although with clear challenges. On the upside, the watershed community has an array of community-based shared values that have been shown to be collectively appreciated by the community, with clear expression of support for its revitalisation. The downside lies on the receding relevance of these shared values to the present generation. Even high shared-value attribution to the fireflies and its habitat will decline if the sense of community ownership to its conservation efforts and ecotourism-related activities continue to reduce over time. Therefore, one can conclude that the Mukim Pasangan community-based shared values should first be revitalised to the present generation before its potential as a heartware driver can be explored more ambitiously for the bigger context. This is where our translational research aims to explore more in the future.

In terms of cross-national policy learning, the use of this policy strategy also needs to take into consideration the particular historical, social and cultural "walls" (using the House Model analogy explained earlier) of the Japanese community that have made this strategy much more plausible in Japan, but may be lacking in Malaysia at present. These include:

- Deeper environmental ethics in landscape appreciation.
- Higher community-level consensus and collaboration, due to cultural homogeneity in tradition, language and spiritual beliefs.
- Historical norms in synergising the role of local communities and local authorities in place-based decision making.

These challenges notwithstanding, the potential of this heartware approach to be applied in Malaysia should not be neglected. The real challenge is to use this refined understanding to help develop better localised strategies for Malaysia’s unique local context. In terms of future Japan-Malaysia cross-national policy learning, the findings can be useful to identify more focused areas for collaboration in the future. This could include the area of citizen science, place-based science, science communication, approaches in citizen engagement, landscape conservation, comparative environmental ethics and inter-generational learning for sustainable development.

It is worth noting however that the current state of empirical evidence, in our opinion, is not sufficient enough to demonstrate whether the heartware approach can work better than the non-heartware approach, or vice versa. Hence, it would be difficult to say that a Japanese approach with strong heartware orientation would work better for a country like Malaysia. There are many ways to describe the difficulties in terms of policy implementation. Simplistically, if the software and hardware components have more dictating influence than the heartware component on the judgment criteria, the heartware effects may be obscured. This often happens for many “intervention” type undertakings with clear achievement target and shorter time horizon for assessment of policy outcomes. However to deal effectively with the more 'wicked' long-term perspective of IWM, we argue that the necessity of this heartware approach is clearer. From this perspective, policy issues have more nebulous implications about their resolution, i.e., we do not really know when and how the issues have been successfully addressed. Therefore, decision makers have to continue to strive beyond the time frame of planning and implementation for which hardware and software approaches might only bring about the provisional outcome. Only a good heartware foundation can help sustain this process of continuous improvement and the achievement of better, more resilient long-term solutions. Community-based shared values, as argued in this paper, can be an essential catalyst and sustainer to this process.

Finally, the findings in this paper are by no means sufficient to provide a holistic understanding on the local application of this Japanese-inspired heartware strategy. Identifying community-based shared values and its possible relevance for the Selangor River watershed community is just a starting point. Its actual usefulness can only be determined when the shared values are incorporated into proper programmes and tested organically and consistently within the broader governance strategy and decision making process. As the saying goes: 'Only time will tell'.

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