United Nations Educational, Scientific and Cultural Organization

Management of Social Transformations Programme

Integrating Social Inclusion and Sustainability Science:

Empowering Local Community through Environmental Ethics/Education and Capacity Building Initiatives

by

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Background

- Environmental management is core of environmental sustainability
- Environmental sustainability requires social inclusion
- Sustainability science driver for sustainability
- Sustainability science combines efforts of natural science & social science
- Social inclusion is very much at the heart of Sustainable Development Goals (SDGs)
- Scientists, community, ethics/value-based organisation (IKIM) and government (agencies) working together for social inclusion
- IKIM as an example of relevant strategic partner (to universities and government agencies)

SDGs Supported

Source: Sustainable Development Goals (SDGs). United Nations. http://sustainabledevelopment.un.org/

Asia's Next Challenge: Securing the Region's Water Future

Indian residents of Kusum Pahari slum in New Delhi filll water buckets during a daily delivery from a municipal water board tanker. (Robert Nickelsberg/Getty Images)

Nation Home › News › Nation

Saturday, 16 April 2016

Manage water carefully, SPAN urges users

Nation Home › News › Nation

Saturday, 16 April 2016

Massive water crisis threatens nation

News Feature | May 11, 2016

Malaysia Faces Long-Term Water Crisis

Source:
http://www.straitstimes.com/asia/thailand-malaysia-hit-by-water-shortage
http://www.thestar.com.my/news/nation/2016/04/16/massive-water-crisis-threatens-nation-water-levels-at-rivers-and-dams-dropping-acutely-by-the-day/
http://www.thestar.com.my/news/nation/2016/04/16/manage-water-carefully-span-urges-users/

Sustainability Science in Practice

- *How We Do It*
- *Our Approach*
- *Integrated Water Management (IWM)*
- *Challenges – Integrating Local Values with Policy*
- *Community Empowerment as a Form of Social Inclusion*

Politicisation & Water Issues: Need for Social Inclusion

4 NEW STRAITS TIMES
PRIME NEWS

Selangor Menteri Besar ***Datuk Seri Azmin Ali*** *(second from right) inspecting the* ***polluted river in Kampung Sg Buah,*** *Dengkil, yesterday.* **Pic by Muhd Asyraf Sawal**

Police not ruling out river sabotage

LAST MONTH'S CUTS: They are studying evidence from state water authority

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POLICE are looking into the possibility of sabotage in their probe into last month's contamination of Sungai Semenyih.

Selangor Criminal Investigation Department chief Senior Assistant Commissioner Fadzil Ahmat yesterday said investigations into the case started when police received a report from the Selangor Water Management Authority or Luas last month.

"We have received some evidence from Luas. Investigation is still ongoing," he said.

Water supply was disrupted with the closure of the Semenyih Water Treatment Plant last month following pollution fears.

Water supply was again disrupted over the weekend with the closure of the same treatment plant, with Menteri Besar Datuk Seri Azmin Ali saying the odour pollution was traced to three locations in Negri Sembilan.

A team from Luas detected the sources of pollution at 45.9km of the Elite highway (North South Expressway Central Link), Nilai R&R (rest and recreation) northbound off the North South Expressway and the Nilai Memorial Park.

"Luas has detected a site off the Elite highway in Negri Sembilan where solvents were dumped by a hillside. The solvents have flowed into a tributary of Sungai Buah, of which its upstream is in Nilai.

"The most alarming rate of odour pollution is at the Nilai Memorial Park which registers an odour pollution of 22 ton," Azmin said.

Ton refers to threshold odour number, of which normal odourless water registers at zero.

Azmin said this was not the time to blame anybody and he called on the Department of Environment, Luas, the National Water Services Commission and Kumpulan Air Selangor to all work together to solve the problem.

Negri Sembilan Menteri Besar Datuk Seri Mohamad Hasan had said parties should avoid blaming each other for the closure of the Sungai Semenyih water treatment plant until the technical investigations determine the source of the pollution.

"My advice is don't be too quick to blame others. Just wait for the technical report and from there, we will take appropriate action."

Meanwhile the Selangor state government has sent soil and water samples taken from a site in Nilai, where pollutants were allegedly dumped to contaminate Sungai Semenyih, and forcing the shutdown of the treatment plant.

Selangor executive council member Elizabeth Wong said the state administration believed that the pollutants, the type of which had yet to be identified, was disposed into a drain on purpose, by perpetrators who knew that the water there would flow into the Semenyih Water Treatment Plant's intake point.

CHALLENGES: Lack of Understanding

NST 25/10/16

No sign of water tankers, say residents

KUALA LANGAT: Residents affected by the water cut following the closure of the Sungai Semenyih water treatment plant were left to fend for themselves yesterday.

Some resorted to desperate measures to get water for their daily use.

Mariana Samsudin, 27, a resident of Taman Kota, Sungai Rambai in Jenjarom, said neighbours broke a big water supply pipe at the roadside to get water.

"We had no choice as no water tankers came. We were desperate as we could not wash our clothes and our children needed to go to school."

Another area where residents said Syarikat Bekalan Air Selangor Sdn Bhd (Syabas) failed to send water tankers was in Kampung Sungai Bumbum in Pulau Carey.

An Orang Asli resident Atan Hafirn, 63, alleged that no tankers had come since Sunday, forcing him to travel 15km to Telok Panglima Garang to buy bottled water.

Sumathi A. Subramaniam, a resident of Taman Duto Hormat in Telok Panglima Garang, yesterday claimed that she had waited for Syabas water tankers since Sunday night.

"It's Deepavali this Saturday. How am I going to finish my preparation if the situation continues?" said Sumathi, who hopes the authorities can fix the problem before the festive celebration.

Stall operator Mailyati Md Suliman, 41, said a neighbour told her that a water tanker came to the area at about 1am yesterday.

"Why must it come so late? We were asleep and did not even know it came.

"We were not given any schedule when the water tanker was coming to our area," she said.

Mailyati said she and her husband were lucky as they began storing water after they had a bad experience last month.

"Last month, we were informed about a temporary water cut, but this time we were not notified at all. But luckily for us, we stored water for our daily use and business.

"The water we saved would last us for only about two days. If the water cut persists, I will have no choice but to close my stall."

Residents getting ***water from a roadside pipe*** *in Taman Kota, Sungai Rambai, Jenjarom, yesterday.* **Pic by Faiz Anuar**

'Stop playing politics and get water flowing'

KUALA LUMPUR: As the blame game continues over the pollution in the Sungai Semenyih, frustrated water conservation groups say playing politics is not going to solve the Klang Valley's water problem.

The Selangor government is claiming sabotage in the disruption on Sunday and another earlier this month when pollution caused the Semenyih water treatment plan to shut down, causing some 1.6 million residents to go without water.

The claims became debate fodder in Parliament, with Selangor Umno daring the state to lodge a police report over the allegations.

Responding to the arguments, Association of Water and Energy Research Malaysia (AWER) president S. Piarapakaran said no criminal element had ever been found in river pollution cases here.

It has always been factories dumping chemicals into the water.

"If that (the claims of sabotage) is true, these people should be treated like terrorists. But I don't think that's the case here. When the menteri besar said it appeared systematic – of course. Because companies doing this do not want to be caught.

"To pollute a river of that size, it won't be one person carrying 10 drums, it's not possible. If they tried to do it in an industrial area or a kampung, for sure someone will notice them," he said, attributing to the "alarming" number of cases to the poor enforcement and lack of manpower in the Department of Environment (DOE).

Piarapakaran said businesses looking to save costs on treating waste water could always be expected to cut corners and called on politicians to look at the issue seriously. He called on Selangor to develop a comprehensive inventory of chemicals and the companies that have them so the culprits are identified.

Water and Energy Consumer Association of Malaysia (Wecam) president Saravanan Thambirajah was frustrated that authorities did not appear to have a Plan B for supplying water to Malaysia's most populous state.

"The festive season is coming up. We are really frustrated because the people's voices and grievances are not heard and authorities are very slow in taking action.

"So far, no one has come up with an action plan to combat this issue and no explanation has been given.

"Three disruptions in one month has a huge negative implication on people and businesses. The authorities need to wake up," said Saravanan.

Earlier this month, media reports quoted Selangor officials saying there could be an element of sabotage when a strange odour in the Sungai Semenyih halted water treatment. The source of the pollutant was traced to a recycling factory in Taman Sri Haneco, Semenyih.

Over the weekend, areas in Penaling, Hulu Langat, Kuala Langat and Sepang districts again faced temporary water disruption following the shutdown of the Sungai Semenyih water treatment plant because of odour pollution in the river yesterday morning.

Syarikat Bekalan Air Selangor group corporate communication head Amin Lin Abdullah said the source of odour in the river was suspected to be from the industrial area in Nilai, Negri Sembilan.

Four raw water supply contamination cases in just 1 month

Oct 23: Sungai Semenyih water treatment plant shut down due to odour pollution from the Nilai Industrial area.

Oct 7: Langat and Cheras plants shut down due to odour pollution believed to be from Sungai Semantan, Pahang.

Oct 4: Sungai Semenyih plant shut down due to odour pollution.

Sept 23: Sungai Semenyih plant shut down due to contamination from Sungai Lalang near the Semenyih Hitech area.

Sept 22: Sungai Semenyih plant shut down due to contamination believed to be from an illegal factory along Jalan Sungai Lalang.

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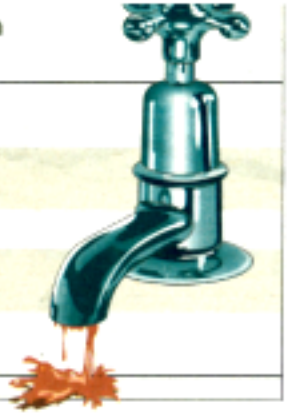


Kelantan folk cry foul over dirty water

KOTA BARU: Fed up over what they claim has been 10 years of poor quality water from their taps in Kelantan, more than 100 people held a demonstration here to express their anger. Representatives of more than 30 NGOs took part in a peaceful gathering outside the government complex in Kota Darul Naim.

The Gabungan Bertindak Restorasi Air Kelantan (Restorasi) NGO handed a memorandum to the PAS led Kelantan government during the gathering.

The memorandum demanded for change in the management of the Air Kelantan Sdn Bhd (AKSB) which, they alleged, had failed to deliver quality treated water for more than a decade.

A spokesman for the group, Datuk Seri Mohd Fared Ghani, said the people were fed up with the state of the water supply services.

He said an independent auditor should be appointed to investigate AKSB's non-revenue water losses and public funds spent to maintain the water agency.

"The people of Kelantan deserve to get clean and treated water like those in other states. We want changes to the state water supply company," said Mohd Fared.

Water woes loom in Malacca with three dams critical

MALACCA: The problem is not just in Selangor. A water crisis is looming in Malacca, too, with three dams nearing critical levels.

Chief Minister Datuk Seri Idris Haron said Durian Tunggal Dam was at 37m, just 2m from the danger level while the other two dams were also reaching critical stages.

"We have no choice but to activate water rationing if this situation continues.

"Any rationing exercise will be done with careful consideration and on a 12-hour rotation basis to allow households to store water," he said after the tabling of the state budget yesterday.

Idris acknowledged that the state was experiencing heavy downpours but there was no rain over the three dams.

He said that the state government conducted cloud seeding yesterday.

Idris said alternative measures had to be considered as the levels at other major dams – Jus and Asahan Dams in Jasin – were also at dissatisfactory levels.

"I was informed that it rained in several parts of the state but not over the catchment areas," he said.

Ayer Keroh assemblyman Khoo Poay Tiong asked the state government to immediately look into the water shortage in the state.

"The dams are drying up fast. It's just a matter of time before we have a crisis like in 1991," he said.

A drought in late 1991 and a mistake in monitoring the Durian Tunggal Dam level has been blamed for the worst water crisis to have hit Malacca.

Social Inclusion as a Form of Governance (of Water)

- Mainly associated with the decision of governments. Whilst the 'governmental' mode of governance is still important, we are currently seeing modes of governance involving **NGOs and private sectors as other equally important players, such as communities**.
- **Environmental governance** is a set of regulatory processes, mechanisms and organisations through which political actors influence environmental actions and outcomes.
- Due to the presence of **numerous actors**, governance is 'polycentric' with multiple institutions holding power in overlapping ways that affect our decision making in **complex ways**.
- Everyone need to put their act together – **role of strategic partnership/ IMPACT PARTNERS**

Source: Syarilla MS, Jamilah M, Goh HC and Nisfariza MN (2015). ***Spatial-Environmental Governance In The Sungai Selangor Watershed*** in Jamilah Mohamad, Hong Ching Goh (eds). Land-Use Dynamics and Policies in the Sungai Selangor Watershed. Kuala Lumpur: University of Malaya Press

WHAT IS NEEDED!

Science literacy for the people

By PROF DATIN DR AZIZAN BAHARUDDIN

Besides schools and universities, science education can take place very successfully when researchers interact with society on the ground.

THE number of students taking subjects in science at the SPM and STPM level has dramatically decreased and we should be alarmed.

Lack of interest in science is a global issue. A recent Australian report says that while the overall number of students attending the 6th form has increased by 16% in the last decade, the portion of these students taking up chemistry, biology, physics and mathematics has declined by about 38%.

Science, technology, engineering and mathematics (STEM) are drivers of the economic wellbeing of any country. In the automotive, palm oil, rubber, medicinal/pharmaceutical and other industries of Malaysia, STEM knowledge and know-how are the important prerequisites for success.

The world is now facing some serious crises, the most critical being climate change. The Conference of Parties (COP21) was held recently in Paris.

Attended by more than 160 countries including Malaysia, COP21 is regarded as one of the last efforts of humankind to ensure that the world's temperature will not reach the increment of 2°C by the end of this decade.

In our own midst, Malaysians have and will be witnessing the effect of climate change in the form of unprecedented floods, heat waves and cyclones. Such events, we know, will be a norm in the near and not-too-distant future.

Our mitigating efforts in the context of disaster management – which seem to be focusing more on preparing food, clothing and medicines – are commendable but not sufficient.

We need indigenous wisdom and capacities to be innovative in terms of the tools and "know-how" of, if possible, preventing and not merely mitigating the effects of such climate change-induced disasters.

For example, floods will cause damage to sewerage and clean water delivery systems, which in turn will have an impact on health. STEM-based professionals and para-professionals will have the leading role in helping the victims and the country by inventing and innovating the necessary means and tools.

Can we imagine encountering such critical times without the necessary manpower (engineering and techno-scientific experts) to help? This would be the situation if the trend of not mastering sciences or STEM is allowed to follow its current course.

The scenario described above is a summary of the need for science literacy to be massively improved in our society. Not merely do the teachers who teach science have to do their science teaching in a creative way, to spark and maintain interest among students in STEM subjects. Parents, too, have to encourage their children to pursue science subjects.

Besides, as already proven in France, if properly trained, non-science-based teachers, especially at the primary level, can successfully teach science as well. Granted, the career path of those who pursue science in higher education may not be too clear sometimes, but this misperception can be unravelled and cleared up.

According to a recent chief scientist's report, 75% of the fastest growing occupations today actually require STEM skills and knowledge. Students or those entering the job market need to be exposed to STEM content in their curricula, at least up to the secondary level.

Education in science can also take place very adequately and successfully via what is known as citizen science. One particular example is the HEARTWARE approach undertaken by the Asian Core Program (ACP) researchers of Universiti Malaya (UM), the Japanese Society for the Promotion of Science (JSPS), as well as Ikim.

The focus of the HEARTWARE group was to educate six villages in Kuala Selangor along the Sungai Selangor about the ecology (very much a part of STEM) of the river. The word "HEARTWARE" is significant as the thrust was to make the citizens/villagers residing in the watershed area reflect and articulate the values of the river in and on their lives.

Besides the ecological resources being explained to them in simple language, villagers were asked to identify and express their values in terms of the river being the source of their livelihood in the historical, cultural and socio-economic contexts.

Whilst doing so, the awareness and "hearts" of the villagers were lit up and they were moved to be conscious custodians of the river and its watershed for their benefit as well as the benefit of the millions of people in the Klang Valley who rely on Sungai Selangor for their water supply.

Looking at the rich flora and fauna of Kampung Kuantan, the attraction of the fireflies (*Pteroptyx tener*) along the Sungai Selangor is worth highlighting.

Lighting up their habitat, hundreds of thousands of *pokok berembang* (*Sonneratia caseolaris*), like Christmas trees via their synchronous flickering, the firefly community at Kampung Kuantan has become a world-class tourist attraction since the 1960s.

To date, only two countries in the world are known to be endowed with such a site. The other site lies deep in the jungles of the Amazon.

Today, the fireflies are threatened because of the lowering of the quality of the river water, which in turn is threatening the *pokok berembang* which only grows naturally along the banks of the river.

In order to empower the local villagers to not merely feel depressed about the declining state of "their" river which in effect is the pulse of their lives, scientific knowledge was critical.

What the researchers involved did was to create special groups such as Kelab Alami KAWA (Japanese for river) and Rakan Alam Sekitar Masjid (Mosque-based friends of the Environment), whose members are given scientific information and the "know-how" regarding the measuring of the quality of the river water, as well as other dos and don'ts for sustaining the river and its rich flora and fauna.

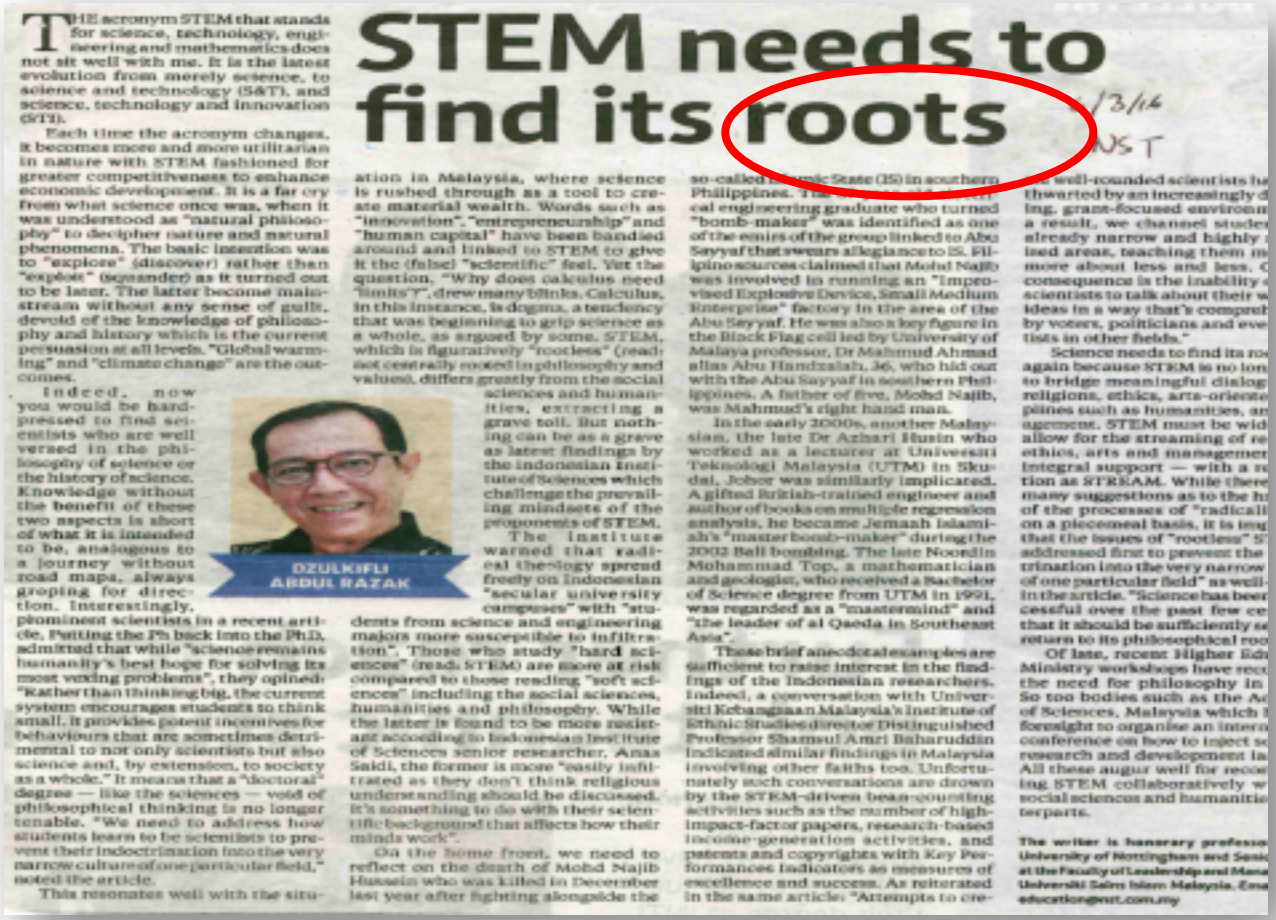
Awareness about how the local households and industries nearby could affect the river system is also highlighted.

The Asian Core project demonstrates how science literacy can be dramatically enhanced when and if scientists and researchers can interact with society on the ground and capitalise on local values and knowledge.

Prof Datin Dr Azizan Baharuddin is Ikim's Director-General. The views expressed here are entirely the writer's own.

Science education can take place very successfully when researchers interact with society on the ground (Source: The STAR – 15 Dec, 2015)

WHAT IS NEEDED!



STEM needs to find its roots

THE acronym STEM that stands for science, technology, engineering and mathematics does not sit well with me. It is the latest evolution from merely science, to science and technology (S&T), and science, technology and innovation (STI).

Each time the acronym changes, it becomes more and more utilitarian in nature with STEM fashioned for greater competitiveness to enhance economic development. It is a far cry from what science once was, when it was understood as "natural philosophy" to decipher nature and natural phenomena. The basic intention was to "explore" (discover) rather than "exploit" (squander) as it turned out to be later. The latter become mainstream without any sense of guilt, devoid of the knowledge of philosophy and history which is the current persuasion at all levels. "Global warming" and "climate change" are the outcomes.

Indeed, now you would be hard-pressed to find scientists who are well versed in the philosophy of science or the history of science. Knowledge without the benefit of these two aspects is short of what it is intended to be, analogous to a journey without road maps, always groping for direction. Interestingly, prominent scientists in a recent article, Putting the Ph back into the PhD, admitted that while "science remains humanity's best hope for solving its most vexing problems", they opined: "Rather than thinking big, the current system encourages students to think small. It provides potent incentives for behaviours that are sometimes detrimental to not only scientists but also science and, by extension, to society as a whole." It means that a "doctoral" degree — like the sciences — void of philosophical thinking is no longer tenable. "We need to address how students learn to be scientists to prevent their indoctrination into the very narrow culture of one particular field," noted the article.

This resonates well with the situation in Malaysia, where science is rushed through as a tool to create material wealth. Words such as "innovation", "entrepreneurship" and "human capital" have been bandied around and linked to STEM to give it the (false) "scientific" feel. Yet the question, "Why does calculus need 'limits'?", drew many blinks. Calculus, in this instance, is dogma, a tendency that was beginning to grip science as a whole, as argued by some. STEM, which is figuratively "rootless" (read: not centrally rooted in philosophy and values), differs greatly from the social sciences and humanities, extracting a grave toll. But nothing can be as a grave as latest findings by the Indonesian Institute of Sciences which challenge the prevailing mindsets of the proponents of STEM.

DZULKIFLI ABDUL RAZAK

The Institute warned that radical theology spread freely on Indonesian "secular university campuses" with "students from science and engineering majors more susceptible to infiltration". Those who study "hard sciences" (read: STEM) are more at risk compared to those reading "soft sciences" including the social sciences, humanities and philosophy. While the latter is found to be more resistant according to Indonesian Institute of Sciences senior researcher, Anas Saidi, the former is more "easily infiltrated as they don't think religious understanding should be discussed. It's something to do with their scientific background that affects how their minds work".

On the home front, we need to reflect on the death of Mohd Najib Hussein who was killed in December last year after fighting alongside the so-called Islamic State (IS) in southern Philippines. [illegible] graduate who turned "bomb-maker" was identified as one of the emirs of the group linked to Abu Sayyaf that swears allegiance to IS. Filipino sources claimed that Mohd Najib was involved in running an "Improvised Explosive Device, Small Medium Enterprise" factory in the area of the Abu Sayyaf. He was also a key figure in the Black Flag cell led by University of Malaya professor, Dr Mahmud Ahmad alias Abu Handzalah, 36, who hid out with the Abu Sayyaf in southern Philippines. A father of five, Mohd Najib, was Mahmud's right hand man.

In the early 2000s, another Malaysian, the late Dr Azhari Husin who worked as a lecturer at Universiti Teknologi Malaysia (UTM) in Skudai, Johor was similarly implicated. A gifted British-trained engineer and author of books on multiple regression analysis, he became Jemaah Islamiah's "master bomb-maker" during the 2002 Bali bombing. The late Noordin Mohammad Top, a mathematician and geologist, who received a Bachelor of Science degree from UTM in 1991, was regarded as a "mastermind" and "the leader of al Qaeda in Southeast Asia".

These brief anecdotal examples are sufficient to raise interest in the findings of the Indonesian researchers. Indeed, a conversation with Universiti Kebangsaan Malaysia's Institute of Ethnic Studies director Distinguished Professor Shamsul Amri Baharuddin indicated similar findings in Malaysia involving other faiths too. Unfortunately such conversations are drown by the STEM-driven bean-counting activities such as the number of high-impact-factor papers, research-based income-generation activities, and patents and copyrights with Key Performances Indicators as measures of excellence and success. As reiterated in the same article: "Attempts to cre-

[illegible] well-rounded scientists ha[ve] thwarted by an increasingly d[ata]-ling, grant-focused environ[ment] a result, we channel studen[ts] already narrow and highly [specialised] areas, teaching them m[ore] more about less and less. C[onsequently] consequence is the inability [of] scientists to talk about their w[ork] ideas in a way that's comprehe[nsible] by voters, politicians and eve[n] tists in other fields."

Science needs to find its ro[ots] again because STEM is no lon[ger] to bridge meaningful dialog[ue] religions, ethics, arts-oriente[d] pines such as humanities, a[rts] agement. STEM must be wid[ened] allow for the streaming of re[search] ethics, arts and managemen[t] integral support — with a n[ew] tion as STREAM. While there [are] many suggestions as to the h[ow] of the processes of "radicali[sation]" on a piecemeal basis, it is imp[ortant] that the issues of "rootless" S[TEM] addressed first to prevent the [problem] trination into the very narrow [field] of one particular field" as well-[argued] in the article. "Science has been [successful] cessful over the past few ce[nturies] that it should be sufficiently s[trong] return to its philosophical roo[ts]

Of late, recent Higher Edu[cation] Ministry workshops have rec[ognised] the need for philosophy in [STEM]. So too bodies such as the Ac[ademy] of Sciences, Malaysia which [has] foresight to organise an intern[ational] conference on how to inject s[ocial] research and development la[ter]. All these augur well for recon[ciling] ing STEM collaboratively w[ith] social sciences and humanitie[s] terparts.

The writer is honorary professo[r] University of Nottingham and Senio[r] at the Faculty of Leadership and Mana[gement] Universiti Sains Islam Malaysia. Ema[il] education@mt.com.my

Roots refer to society and culture

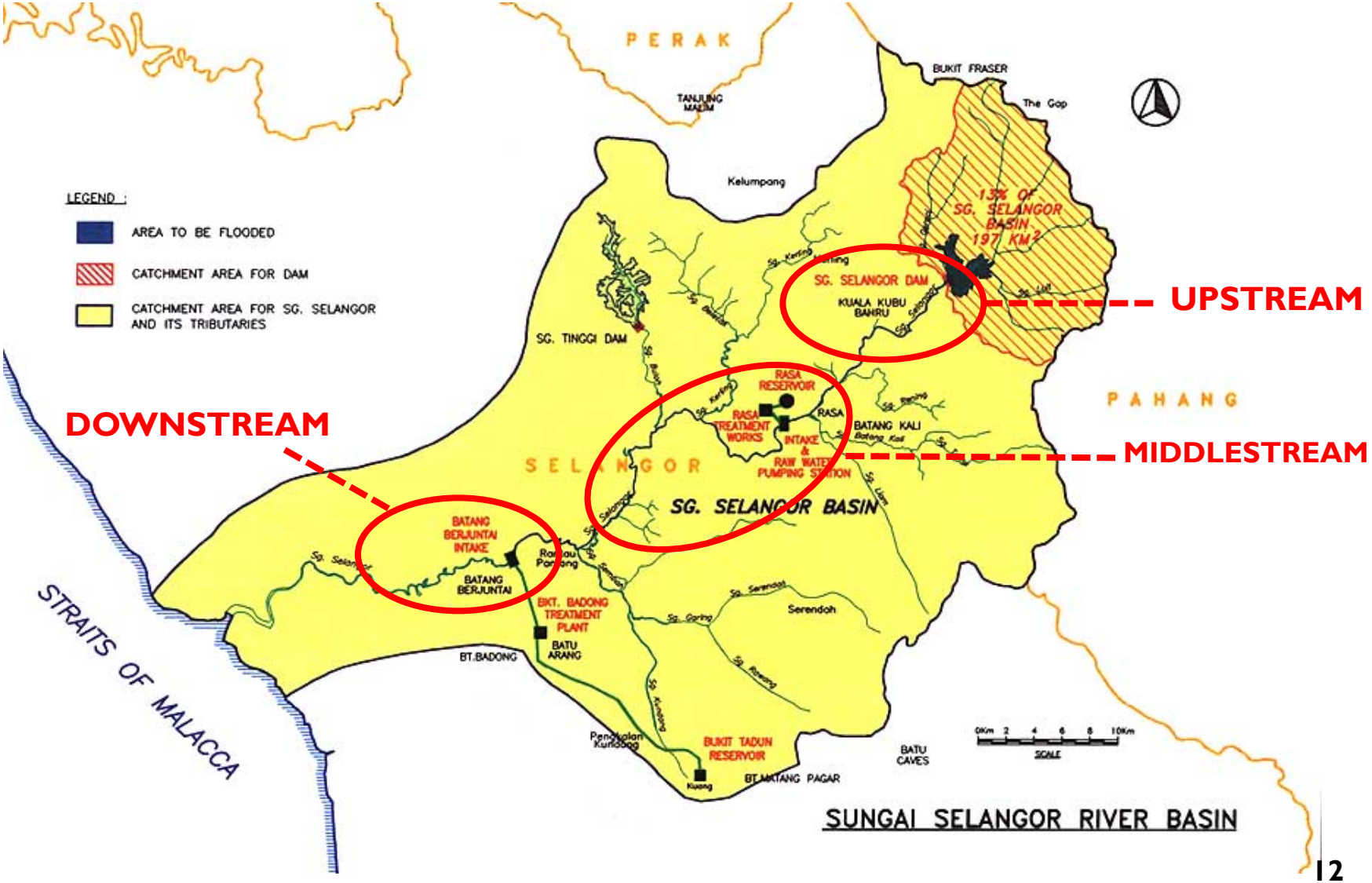
For a policy that promotes social inclusion to be responsive to real social and economic challenges, it must be based on participatory and inclusive processes developed in the social science fields of knowledge. (YB Dato' Sri Rohani Abdul Karim, *Keynote Address, National Dialogue On Enhancing Social Inclusion In Public Policies In Malaysia, Bangi Putrajaya Hotel,* 22 March 2016)

The Project

IKIM teamed up with University of Malaya (UM), Kyoto University and other universities in Malaysia and Japan, to conduct research studies on the social and scientific dimension of the integrated watershed river management (IWRM) and environmental degradation within vulnerable communities in Kuala Selangor.

This ongoing research is designed to provide new knowledge on the social dimension of the IWRM and empower the local community in protecting the environment.

A view of Sg. Selangor...



Why Selangor River?

River Basin	Catchment Area(Km^2)	Tributaries	Dams Location
Sg Selangor	2,200	Sg Sembah, Sg Kanching, Sg Kerling, Sg Rawang and SgTinggi	**Sg Selangor Dam:** Catchment Area: 197 Km^2 Location: upper catchment of Sg Selangor basin near Kuala Kubu Baru **Sg Tinggi Dam:** Catchment Area: 40 Km^2 Location: upper reaches of Sg Buloh

Four main Categories of Functions of River Basin

Source: Department of Irrigation and Drainage, Malaysia. (2010).

The Scientists (Social & Natural, Malaysia – Japan)

The Community of 6 Villages in Mukim Pasangan

Scientist (all women) with village heads (all men)

Our Approach

1. Unite communities, policymakers, private sector and academics to collectively identify the pressing challenges and devise effective solutions.

2. Use indigenous knowledge systems developed with long and close interaction with nature to complement the knowledge derived from modern and social science .

3. Build capacity for linking knowledge with action to promote education for sustainable development (ESD) among the communities & stakeholders.

DIALOGUE

IWRM (Official/Policy) Stakeholders Roundtable Discussion

6 June 2013, Institute of Postgraduate Studies, University of Malaya

- To **discuss the issues, challenges and strategies to enhance a good watershed governance**.
- 45 participants included four stakeholder's representatives from government agencies related to the watershed governance issues.
- Municipal Council representatives were:
  - **Majlis Daerah Kuala Selangor (MDKS)**
  - **Majlis Daerah Hulu Selangor (MDHS)**
  - **Majlis Perbandaran Selayang (MPS)**
- Water management representative:

– **Lembaga Urus Air Selangor (LUAS);** water management authority of Selangor.

• Example of Non-Inclusion

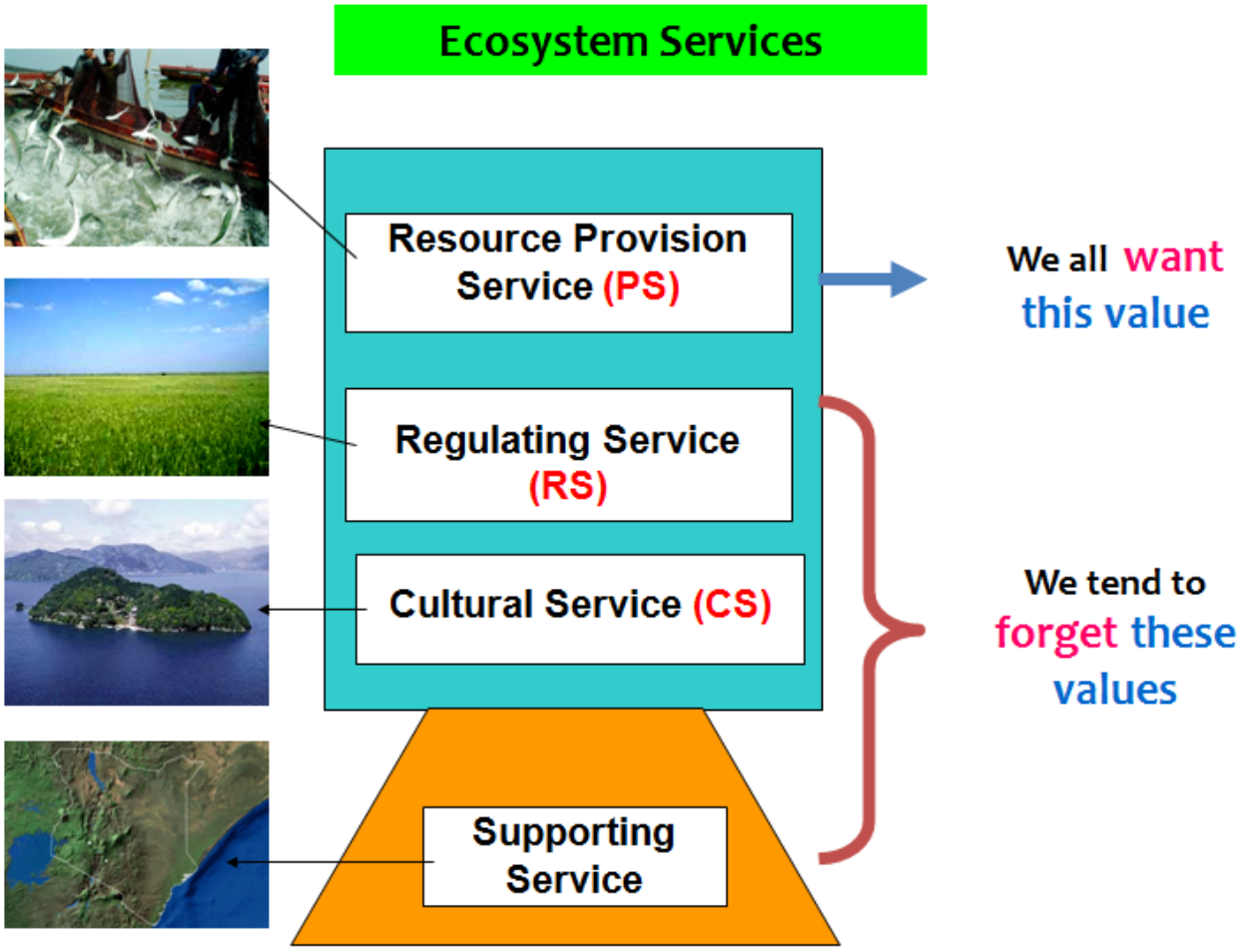
• Business – As- Usual

- The Roundtable identified the following strategies to strengthen watershed governance in the Selangor water catchment:
  i. **Strengthen the policies and implementation capacity**
  ii. **Increase the involvement from various stakeholders**
  iii. **Increase the fund from Federal and State authorities**
  iv. **Implement the Drainage Master Plan**
  v. **Improve the river inventory system systematically**

Source: http://cmsad.um.edu.my/index1.php?pfct=umserge&modul=Activities_and_Photo&pilihan=Stakeholders_Roundtable_Discussion

Telling the People What the River Is/Means

ESSVA = Ecosystem Services Shared Values Assessment



ESSVA adapted and modified from Millennium Ecosystem Assessment (MEA, 2005) © United Nations

Sustainability Science @ Work → Science in the Context of Cultural, Anthropological, Geographic, Political, and Sociological Considerations

The Cultural Dimension of Sustainability Science:
Combining ESSVA with Indigenous Values (cultural, religion)

Juxtaposition of Water Use in *Al-Qur'an* and Ecosystem Services (ES) Standards

No	Water Use	Chapter & Verse	Ecosystem Services Sub-Category (ESSVA)
1	As drinking water for humans, animals and growth of plants	Al-Nahl (16):10; al-Waqi'ah (56): 17-21	**Provisioning services (PS)**
2	Cleansing agent for the physical (purification), spiritual and religious needs (self, clothes and home)	Al-Muddathir (74):4; al-Anfal (9):11	**Regulating services (RS)** & **Cultural services (CS)**
3	To nourish the Earth, for greening the landscape and to balance the ecosystem	Al-Nahl (16):65; al-Rum (30):24; al-Hajj (22):63	**Supporting services (SS)**
4	Source of rizq (livelihood from God) through economic activities such as agriculture, husbandry and fishery	Al-Baqarah (2):22; al-Jathiyat (45):12; al-Maidah (5):96	**Provision services (PS)**
5	As a medium of communications/local and international travel	Luqman (31):31	**Cultural services (CS)**
6	As a means and medium for the expansion of knowledge	Al-Mulk (67):30	**Cultural services (CS)**

[Method of Social Inclusion]

SEMINARS/
WORKSHOP

FIELDWORKS

CITIZENS' ROLE
10 COMMUNITY SHARED VALUES

LOCAL SHARED VALUES
Local Environmental Ethics (Respect for Nature, Spirit to sustain)
Sources of Income
Spirit of Community
Sense of Place (Relationship with the river; Near Water)
Local Knowledge
Local Culture/Etiquette/Religion
Appreciation of River Ecosystem and System Services
Local History & Legends
Childhood Memories
Changes in Water Quality

[Method of Social Inclusion]

IWRM Heartware Fieldwork to Translational Research

FIELDWORKS

SEMINARS/ WORKSHOP

CAPACITY BUILDING

COMMUNITY SHARED VALUES

TRANSLATIONAL RESEARCH

CITIZEN SCIENCE PROGRAM

KAWA Environment Club

RAKAN ALAM SEKITAR MASJID

Mosque – Friends of the Environment

COFFEE TABLE BOOK

Documentation of the shared values

Research Outcomes: Some Highlights

CITIZEN SCIENCE PROGRAM

KELAB ALAMI KAWA
(KAWA ENVIRONMENTAL CLUB)

CAPACITY BUILDING

- Goal

To **empower local community youth through environmental education and capacity building for scientific monitoring** of local habitats, as well as to provide them with a viable low-impact alternative income through ecotourism skills training and infrastructure development

- Guiding Principle

Kelab Alami works to empower and capacity-build rural communities to understand, appreciate, protect and share their local natural habitats and biodiversity so that they can better preserve it for their own long-term traditional use and sustainable alternative livelihoods.

KAWA (Japanese) = RIVER = SUNGAI

Presentation by club youth members inside the Clubhouse

Clubhouse built with funding from Hartalega, a nearby gloves company.
Industry → community empowerment

MOSQUE FRIENDS OF THE ENVIRON MENT

MASJID KG. KUANTAN

CAPACITY BUILDING

- Goal

An outreach program aimed at **developing human capital on water governance** among the Muslim community of Mukim Pasangan, Kuala Selangor, **focusing the mosque**.

- Strategy

1. Training workshop - focusing the high committee members of the mosque
2. Talk show/dialogue, named *Bicara Ad-Deen* which covers the whole Muslim community of Mukim Pasangan and beyond. The talkshow was aired on radio IKIM.fm – influence on local community thinking + behaviour.

Social inclusion Activities with Various Groups in the Community

Documenting Social Inclusion (Eco-Tourism Booklet by the Local Youth)

sub-districts in the Kuala Selangor district of Selangor. There are six villages in this mukim – Bukit Belimbing, Teluk Penyamun, Kampung Sepakat, Tanjung Siam, Kampung Asahan and Kampung Kuantan. Our map-making journey in this mukim is focused on Kampung Asahan, Kampung Kuantan and Tanjung Siam.

Riverine Retreat is named for all the interesting places near the Selangor River that have connections with the locals' everyday life.

Although the Kg. Kuantan fireflies are often the main attraction

Kelab Alami

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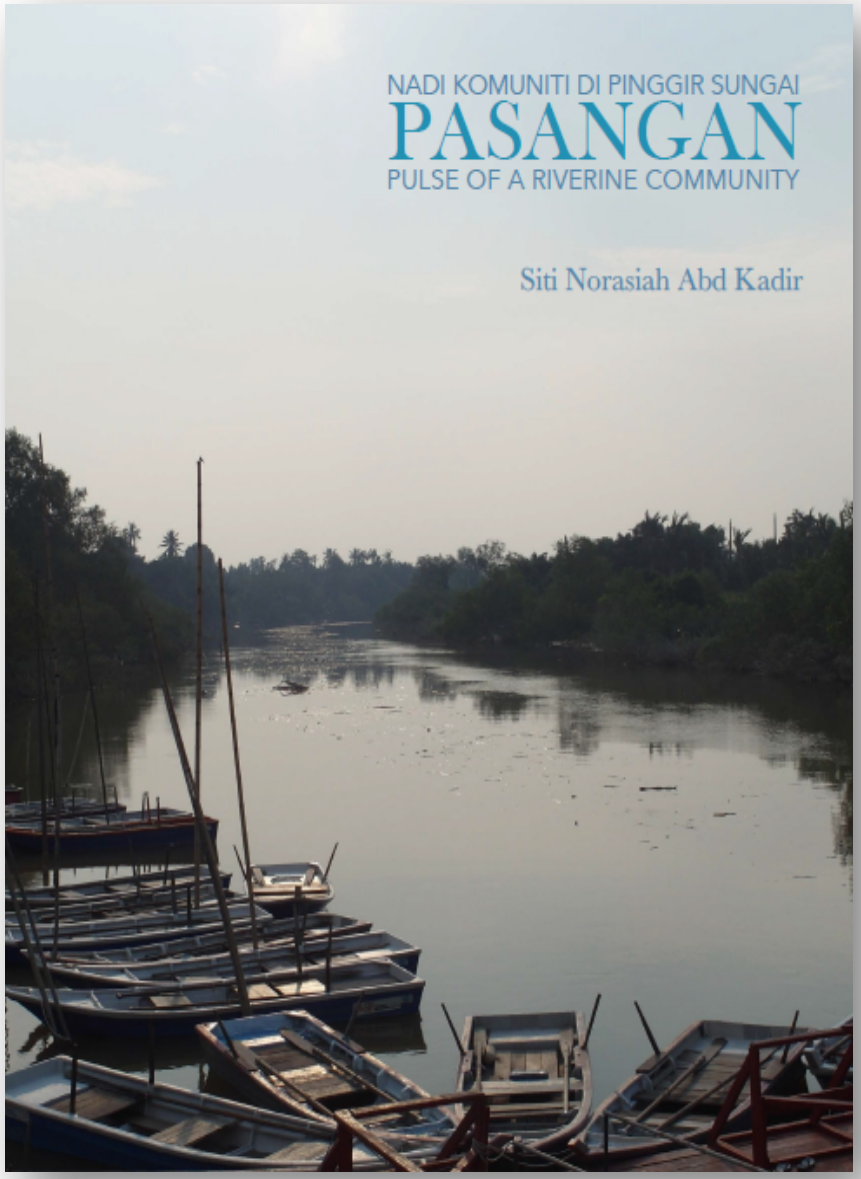
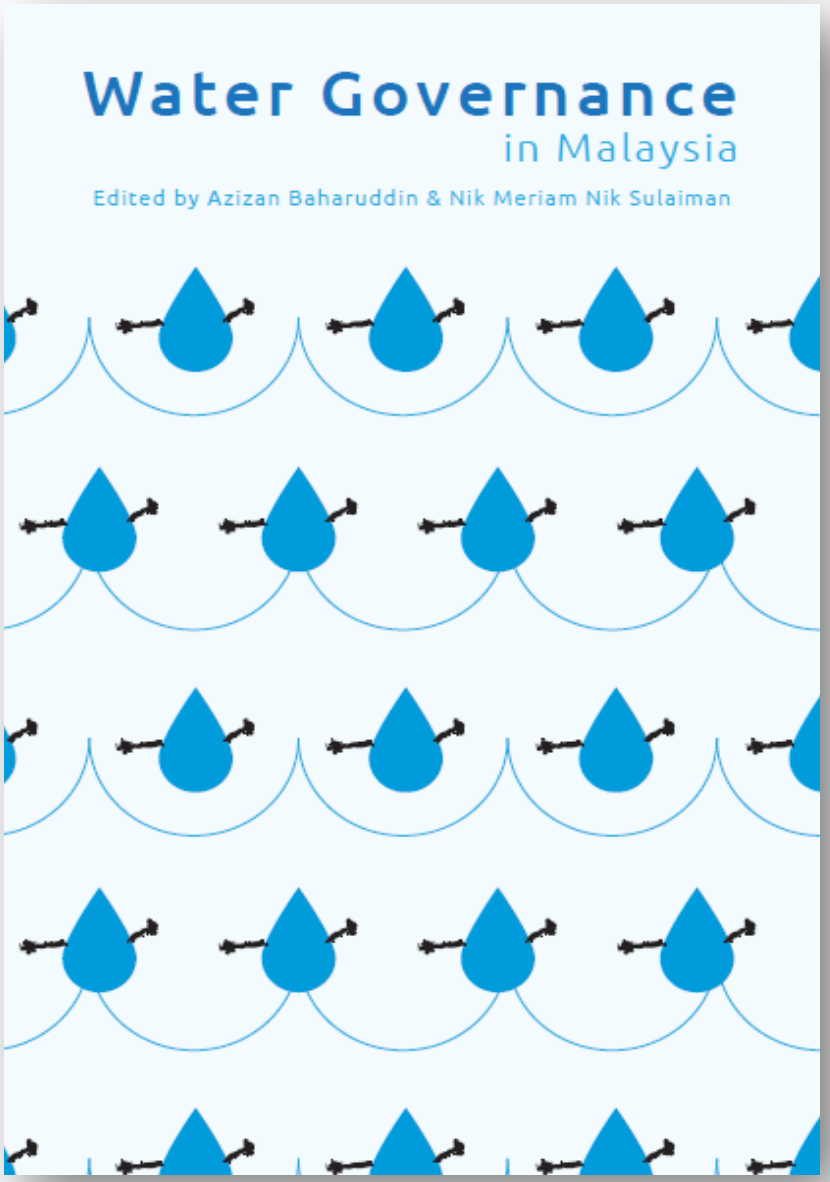
This booklet is also part of the translational output by the "Heartware and Integrated Watershed Management" research group under the Sustainability Science Research Cluster, University of Malaya, with support from the JSPS Asian Core Program and UMCares - The Community and Sustainability Centre, University of Malaya.

Documenting Social Inclusion (Stories of the Riverine Community)





BOOK LAUNCH

(with Head of Villagers, Scientist, Local Authority, Company, NGOs)

Documenting Social Inclusion

Performance by the locals about the state of environment in Mukim Pasangan during the Book Launch Ceremony

PASANGAN authors and researchers

The Community Participation

- ***Why?***

  One of the key factors that led to the detrimental state of our rivers is the lack of community participation in river management

- ***Who?***

  The Community. Anyone and everyone in Malaysia.

- ***How?***

  By raising awareness and understanding on the issues and problems of the rivers to various stakeholders, i.e public, riverine community etc.

Source: One State One River Community Participation Component. Global Environment Centre. http://www.gecnet.info

Conclusion

Our planet is under threat from greenhouse gas pollution that is already changing the earth's climate, melting the ice sheets, flooding the coastlines from rising seas and increasing the incidence and intensity of extreme weather around the world.

The Paris Agreement require coordinated efforts in each country to empower individuals and communities as the drivers of transformation in attitudes and behaviours towards sustainability.

Locally, people need to be engaged in Sustainability Science & Social Inclusion for Sustainability

As a research institute, IKIM promotes public scholarship will continue to work with UNESCO and the ASEAN countries to facilitate these positive transformations, linking science, bioethics, policymakers and society.

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