

## **Environmental Management in Dealing with Dengue Fever Cases Towards Urban Sustainability: Study on the Prevention and Control of Infectious Diseases Act 1998 (Act 342)**

<sup>1</sup>Sharifah Zarina Syed Zakaria, <sup>2</sup>Nor Alina Mohamad Roslan, <sup>1</sup>Mazlin Mokhtar,  
<sup>1</sup>Abdul Samad Hadi, <sup>1</sup>Muhammad Rizal Razman, <sup>3</sup>Jamaluddin Md. Jahi,  
<sup>3</sup>Zuliskandar Ramli and <sup>1</sup>Norul Hajar Nordin

<sup>1</sup>Institute for Environment and Development (LESTARI),

<sup>2</sup>School of Environmental and Natural Resources Sciences,  
Faculty of Science and Technology,

<sup>3</sup>Institute for Environment and Development (ATMA),  
Faculty of Social Science and Humanities,

Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Selangor, Malaysia

---

**Abstract:** In most tropic and sub-tropic countries in the world, dengue fever is an outbreak disease. In Malaysia, one of the environmental management approaches in dealing with dengue fever cases is by enforcing relevant laws. This study inquiries as to enforcement reasoning to explain how effective the Prevention and Control of Infectious Diseases Act 1988 (Act 342) as one of the relevant laws in Malaysian on dengue fever cases towards urban sustainability. Meanwhile, the methods of this study are based on qualitative set up which is based on the Prevention and Control of Infectious Diseases Act 1988 (Act 342) as the primary source of document. Finally, the results potentially provide with better understanding of the enforcement of the Prevention and Control of Infectious Diseases Act 1988 (Act 342) on dengue fever cases towards urban sustainability.

**Key words:** Dengue fever cases, infectious diseases, environmental management, urban sustainability, Malaysia

---

### **INTRODUCTION**

Dengue fever is an outbreak disease. This disease has become one of the major problems in urban areas of tropic and sub-tropic countries like Malaysia and also globally (WHO, 2009). According to Tikki Pang, the disease is caused by a virus carried by mosquitoes. Dengue fever was first reported in Malaysia in 1902. However, it began to be regarded as the major concerned when the first outbreak in the year 1962 occurred in an urban area of Penang which involved 41 cases with 5 deaths. Since, then the number of cases on dengue fever in Malaysia has increased (Malaysia, 2008).

Therefore, it is important to identify environmental management approaches in dealing with infection diseases, such as dengue fever in order to overcome disease outbreak towards urban sustainability in Malaysia. Environmental management can be divided into two approaches; namely environmental management through legal approach and environmental management through non-legal approach.

Management through legal approach has been used in Malaysia as one of the measures to manage the environment. Until now, Malaysia has >45 pieces of legislations/laws regarding to environment management. However to control dengue fever cases, only several legislations/laws are appropriate to be implemented and enforced. It includes, Destruction of Disease-Bearing Insects Act 1975 (Act 154), Prevention and Control of Infectious Diseases Act 1988 (Act 342), Road, Drainage and Building Act 1974 (Act 133) and Town and Country Planning Act 1976 (Act 172) (Jamaluddin, 2001). Environmental management through non-legal approach emphasize on matters other than legal instruments, such as guidelines, code of practises, monitoring activities, educational and research collaborations (Jamaluddin, 2001).

Even though, Malaysia has its own laws and regulations in regards to managing and controlling dengue fever, the cases in Malaysia are still increasing. Therefore, this studies tends to analyze and to explain the implementation reasoning of how effective the Prevention

and Control of Infectious Diseases Act 1988 (Act 342) as one of the relevant laws in Malaysia on dengue fever cases towards urban sustainability.

**Urban sustainability:** Urban sustainability as described by many researchers is a mixture of various features of life including culture, social, economic and environment (Hadi *et al.*, 2007; Zainal *et al.*, 2011, 2012). Hadi *et al.* (2007) further defined urban sustainability as a capacity to sustain the quality of life we value or to which we aspire. In other words, it is usually acknowledged as an ornamental of the environment, social, cultural and economic well-being of current and future inhabitants (Hadi *et al.*, 2007; Zainal *et al.*, 2011, 2012). Urban sustainability has also been recognized to be related to the concept of sustainable development.

**The concept of sustainable development:** The concept of sustainable development has been defined by the World Commission on Environment and Development as development that meets the needs of the present generation without compromising the ability of the future generations to meet their own needs. The mention earlier concept covers two essential scopes which are environment and social aspects. This concept of sustainable development has been highlighted in the 1992 United Nations Conference on Sustainable Development in Rio de Janeiro as the results, Agenda 21 and Rio Declaration has been established. According to Sands (1995, 2003), Agenda 21 emphasises the following matters which include sustainable human settlement, population, consumption pattern, poverty and human health. On the other hand, Mensah (1996) stated that the Rio Declaration addresses on mankind entitlements and rights which include health and productive life.

Sands (1995) indicated the concept of sustainable development is perhaps the greatest contemporary expression of environmental policy, commanding support and presented as the foundation at the Rio Summit, Rio Declaration on environment and development in year 1992 (Razman *et al.*, 2012). This concept of sustainable development has been an element in the international legal framework as early as 1893. According to the case of United States of America vs. Great Britain, [1893] 1 Moore's Int. Arb. Awards 755' (also known as Pacific Fur Seals Arbitration) United States of America has stated the right to ensure the appropriate and lawful use of seals and to protect them from meaningless destruction, for the benefit of human beings (Razman *et al.*, 2009, 2010; Emrizal and Razman, 2010). According to Article 33 of the Lome Convention 1989 states that in the framework of this Convention, the protection and the enhancement of the

environment and natural resources, the halting of deterioration of land and forests, the restoration of ecological balances, the preservation of natural resources and their rational exploitation are basic objectives that the African-Caribbean-Pacific (ACP) states concerned shall strive to achieve with community support with a view to bring an immediate improvement in the living conditions of their populations and to safeguarding those of future generations' (Razman *et al.*, 2011a, 2012; Emrizal and Razman, 2010).

**Objectives:** This study will discuss the following objectives:

- Identifying and analysing the themes and sub-themes that relate to the implementation of the Prevention and Control of Infectious Diseases Act 1988 (Act 342) on the environmental management of dengue fever control towards urban sustainability
- Explaining the implementation of the Prevention and Control of Infectious Diseases Act 1988 (Act 342) on the environmental management of dengue fever control towards urban sustainability

## MATERIALS AND METHODS

A qualitative research method was used and the Prevention and Control of Infectious Diseases Act 1988 (Act 342) has been identified as the case study and as the primary source of document (Fig. 1). In this study, the primary source of document has been analysed by using computer software known as Nvivo. By using Nvivo software, the researchers have built up and tested the coding schemes. This action was necessary in order to determine the reliability. According to Maxwell (2005), there are a few necessary steps in analysing documents by using the software. The primary source of document was identified and selected for the purpose of fulfilling the study objectives, i.e., the before mentioned document. Later, the document was scanned in order to transform them into transcripts that can be analysed by computer software (Nvivo). By using computer software (Nvivo), the researchers identified themes and sub-themes based on the said document which is in line with the study objectives. Following that the researchers required to determine the reliability with the coding schemes during the process of identifying themes and sub-themes by using computer software (Nvivo). Finally, these themes and sub-themes are built up by displaying these results in the form of a model (Razman *et al.*, 2011b).

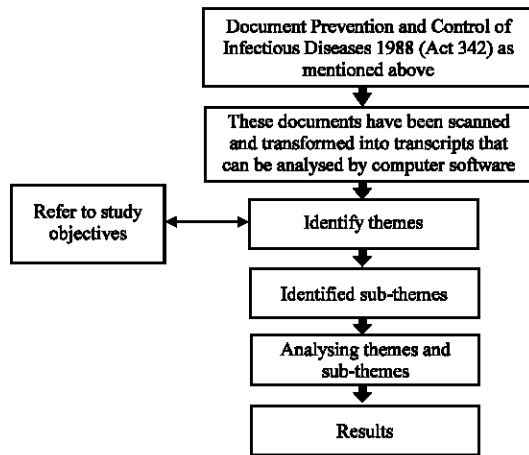


Fig. 1: Document analysis process flow chart (Razman *et al.*, 2011b)

## RESULTS AND DISCUSSION

Based on the document analysis on the environmental management of infectious disease, five main themes and nine sub-themes have been identified (Fig. 2). The themes are notification, declaration of the infected area, control, isolation and observation or surveillance of contacts while the sub themes includes adult, medical practitioner, boarding house manager, police officer or village head, order, regulation, implementation, the risk of exposure and exposure control.

**Notification:** Section 10 Act 342 says that if there are outbreak diseases, adults, medical practitioners, the boarding house managers, police officers or village heads must play their role by notifying the local officer in charge of health environment as been stated in the act:

Every adult, medical practitioner, the person in charge of any boarding-house and any police officer or village head...any house in which any infectious disease appears...upon becoming aware of the existence of such disease with the least practicable delay notify the officer in charge of the nearest district health office or government health facility...of the existence of such disease [Section 10 (1-4)]

The result from the document analysis verified that if the infectious diseases have been detected, those in charge or responsible must perform the necessary role. The notification and alert from them are crucial for the nearest district health officer to take further action as mention in the act. The purposes are to control and to prevent the infectious disease from spreading. They also

need to collect and record statistical data regarding the outbreak and must be able to suggest the remedy or treatment appropriate for medication.

**Declaration of the infected area:** In Section 11 Act 342, it states the need of declaration concerning the infected area. Minister is considered as one of the parties involved for declaration of the outbreak area:

If the minister is satisfied that there is an outbreak of an infectious disease in any area in Malaysia or that any area is threatened with an epidemic of any infectious disease, he may by order in the Gazette, declare such area to be an infected local area and prescribe the measures to be taken to control or prevent the spread of any infectious disease within or from an infected local area such as: To treatment or immunization; to isolation, observation or surveillance, the period of which being specified according to circumstances or to any other measures as the authorized officer considers necessary to control the disease [Section 11 (1-3)]

The declaration of the infectious disease outbreak is also necessary for controlling and preventing the infectious diseases. Minister need to be alert, responsive and sensitive to the case level. They can refer back to the statistical data collected or the notification which has been issued from the previous stage. The purpose is to announce or to make known to the resident of the area that there is presence of dengue fever case in the community.

**Control:** Section 12 Act 342 states that the person who has been infected should not act in any way that may spread the disease:

No person who knows or has reason to believe that he is suffering from an infectious disease shall expose other persons to the risk of infection by his presence or conduct in any public place or any other place used in common by persons other than the members of his own family or household [Section 12 (1)]

No person who knows or has reason to believe that he is suffering from any infectious disease specified in part II of the first schedule shall do any act which he knows or has reason to believe is likely to lead to the spread of such infectious disease [Section 12 (2)]

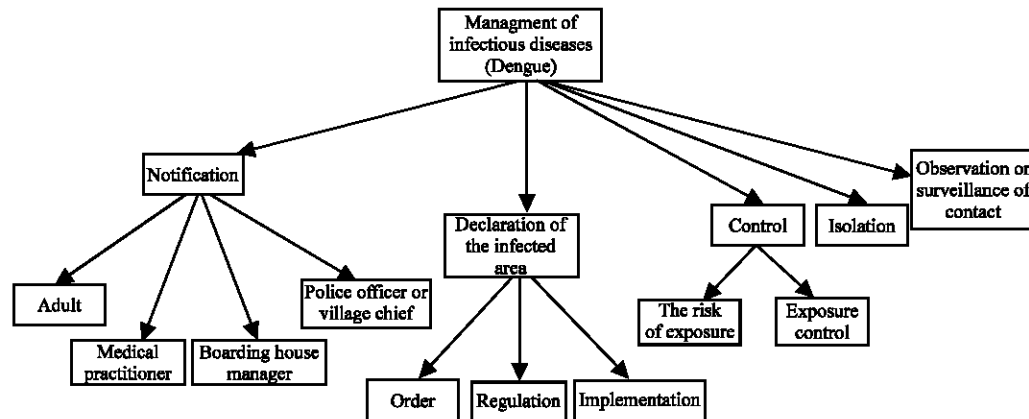


Fig. 2: Model of themes and sub-themes for management of infection diseases (dangue)

Regulation for controlling and monitoring the disease need to be prepared and set up to prevent infected person from spreading the disease to others in the community. The infected person must also seek the possible and needed care to be healed or to recover before they can go out and joint the community and proceed or continue with their daily activities. By doing this, they can reduce and prevent the problem from spreading to the community.

**Isolation of infected persons and suspects:** According to Section 14 Act 342, there is a need to isolate the infected person. Quarantine need to be done to those who have been infected and they will be held and treated at the quarantine location until they are free from the disease and will not be of any harm to others:

An authorized officer may cause any person who is infected or whom he has reason to believe to be infected to be removed to quarantine station for treatment and may detain the person at the station until he can be discharged without danger to the public [Section 14]

This study has identified that isolation is necessary and crucial for infected person. Monitoring, isolation and quarantine can isolate the infected person in the house or in the hospital to prevent the virus from spreading to others while getting treatment from doctors and other medical officers.

**Observation or surveillance of contacts:** Section 15 (1) clearly explained that authorized personnel can make observations and surveillances in the infected area until the area have been completely free from the disease:

An authorized officer may order any contact to undergo observation in such place and for such period as he may think fit or to undergo surveillance until he may be discharged without danger to the public [Section 15 (1)]

Lastly, through document analysis, it clearly explain the role of authorized personnel to guarantee the infected area has been completely free from the disease by carrying out observations and surveillances.

## CONCLUSION

Based on the document analysis of the Prevention and Control of Infectious Diseases 1988 (Act 342) on the environmental management of infectious disease, this study has identified 5 main themes which are notification, declaration of the infected area, control, isolation and observation or surveillance of contacts. It has also identified 9 sub-themes which includes adult, medical practitioner, boarding house manager, police officer or village head, order, regulation, implementation, the risk of exposure and exposure control. The Prevention and Control of Infectious Diseases 1988 (Act 342) in controlling the dengue fever in urban areas is referring to environmental management of infectious disease which is geared towards achieving sustainable development and is still developing. Nevertheless, there is enough proof that authorities conducts and action's are based on legal provisions. This also proof that the above-mentioned law are being put into practice. The extensive evidence proved an excellent argument which reflects that the Prevention and Control of Infectious Diseases 1988 (Act 342) can be implemented and exercised to ensure the urban sustainability achieved.

## ACKNOWLEDGEMENT

Part of this study was conducted by using the research funding of the (XX-04-2012) research project and (FRGS/1/2011/SSI/UKM/03/19) research project.

## REFERENCES

- Emrizal and M.R. Razman, 2010. The study on international environmental law and governance: Focusing on the montreal protocol and the role of transboundary liability principle. *Soc. Sci.*, 5: 219-223.
- Hadi, A.S., S. Idrus, A.H.H. Shah and A.F. Mohamed, 2007. Shaping Livable Cities for Malaysia. In: *Modelling Local Sustainability: Developing a Conceptual Framework for Sustainable Development*, Hadi, A.S., S. Idrus, A.H.H. Shah, A.F. Mohamed and N.M. Hamim (Eds.). LESTARI, Universiti Kebangsaan Malaysia, Bangi, pp: 11-18.
- Jamaluddin, J., 2001. *Pengurusan alam sekitar di Malaysia: Dari Stockholm ke Rio de Janeiro dan seterusnya*. Syarahan Perdana Universiti Kebangsaan Malaysia, 16 Februari, Penerbit Kebangsaan Malaysia University, Bangi.
- Malaysia, 2008. Laporan tahunan kementerian kesihatan Malaysia 2007. Kementerian Kesihatan Malaysia, Kuala Lumpur. <http://www.moh.gov.my/images/gallery/publications/md/lt/2007-2.pdf>.
- Maxwell, J.A., 2005. *Qualitative Research Design: An Interactive Approach*. 2nd Edn., SAGE Publications, Thousand Oaks, CA., ISBN: 9780761926085.
- Mensah, C., 1996. The United Nations Commission on Sustainable Development. In: *Greening International Institutions*, Werksman, J. (Ed.). Earthscan, London, pp: 21-37.
- Razman, M.R., A.S. Hadi, J.M. Jahi, A.H.H. Shah, S. Sani and G. Yusoff, 2009. A study on negotiations of the montreal protocol: Focusing on global environmental governance specifically on global forum of the United Nations environmental programme. *J. Food Agric. Environ.*, 7: 832-836.
- Razman, M.R., A.S. Hadi, J.M. Jahi, A.H.H. Shah, S. Sani and G. Yusoff, 2010. A study on the precautionary principle by using interest approach in the negotiations of the montreal protocol focusing on international environmental governance and law. *J. Food Agric. Environ.*, 8: 372-377.
- Razman, M.R., A.S. Hadi, J.M. Jahi, S. Idrus, A.F. Mohamed and A.H.H. Shah, 2011a. Transformation for better living environment in urban region: Application of the principle of transboundary liability and the montreal protocol experiences. *Akademika*, 81: 93-102.
- Razman, M.R., S.S.A. Yusoff, S. Suhor, R. Ismail, A.A. Aziz and K.A.T. Khalid, 2011b. Regulatory framework for land-use and consumer protection on inland water resources towards sustainable development. *Int. Bus. Manage.*, 5: 209-213.
- Razman, M.R., Z.M. Jahi, S.Z.S. Zakaria, A.S. Hadi, K. Arifin, K. Aiyub and A. Awang, 2012. Law of private nuisance as a tool of environmental awareness in Malaysia towards sustainable development. *Int. Bus. Manage.*, 6: 270-276.
- Sands, P., 1995. *Principles of International Environmental Law: Frameworks, Standards and Implementation*. Vol. 1, Manchester University Press, Manchester, UK., ISBN-13: 9780719034831, Pages: 773.
- Sands, P., 2003. *Principles of International Environmental Law*. Cambridge University Press, USA.
- WHO, 2009. *Dengue: Guidelines for Diagnosis, Treatment, Prevention and Control*. World Health Organization, Geneva, ISBN: 9789241547871, Pages: 147.
- Zainal, H.M.R., M.R. Razman and J.M. Jahi, 2011. Interest on costs and benefits approach in urban sustainability: Focusing on the precautionary principle. *Int. Bus. Manage.*, 5: 114-118.
- Zainal, R., M.R. Razman and J.M. Jahi, 2012. A study on urban sustainability and the principle of transboundary liability: The interest approach paradigm. *J. Food Agric. Environ.*, 10: 984-987.