

Convivial Technology for Sustainable Coastal Development

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Keywords: *coastal zones, sustainable development, freedom, convivial technology*

Abstract: Coastal areas, including those in small islands, are vulnerable to natural disasters and extractive activities that are detrimental to the coastal environment. Growth-obsessed policy is a direct threat to sustainable development of these productive zones. With limited access to energy and a fragile environment, we propose convivial technologies -as proposed by Illich (Schoemaker calls it appropriate technology) and much later on by Pauli- to be adopted in conjunction with development policy which is oriented more towards equity rather than growth. We have to reformulate development not as an expansion of material production, but more as extension of our freedom. In this view, the adoption of convivial technologies to retool the society will largely depend on the learning culture of the coastal community.

1 INTRODUCTION

In our attempt to reduce the risk of natural disasters and extractive human activities in coastal areas, we need to consider a development policy which is directed more to equity rather than growth. Some researchers call it de-growth. From technological point of view, we need to adopt convivial technologies (Illich, Tools for Conviviality, 1973). This technology is characterized primarily by its low energy consumption and its potential to promote creativity and independence. Schoemaker called it appropriate technology (Schoemaker, 1973). Later on, (Gunter, 2010) introduced an approach which he termed blue economy, in which the role of technology is not to replace humans as productive subjects, but to creatively solve the problems of production characterized by these features: zero waste, creating values, using renewable source of energy and creating jobs.

Coastal areas in developing countries are under serious pressure from anthropogenic activities. The mantra of development in these countries is, mistakenly, growth. Although some authorities call it quality growth, in practice this is easier said than done. We then see a progressive destruction of the coastal environment in a massive scale. At the same time, we see a growing gap between the rich and the poor in local, national, regional and global scales. This trend is immoral and has to be stopped. Under

Donald Trump, the US withdrawal from climate change multi-lateral agreement is a serious blow to our attempt to save us from global environmental collapse. Chomsky repeatedly said that the Republican Party in the US is the most dangerous organization in the world.

In Indonesia, the situation of most coastal areas including those in small islands is not very much different from those described above. Policies and regulations to manage environmental degradation have been in place, but the pressure to degrade coastal environments seems unstoppable. This paper attempts to analyse how convivial technologies can promote coastal community to improve their capacity to sustainably appropriate coastal resources and to invest in resilience against upcoming disasters.

2 CONVIVIAL TECHNOLOGIES AND DEVELOPMENT AS FREEDOM

(Amartya, 1999) has proposed that in order to sustainably live a happy life for most peoples, we have to rethink development not as an expansion of material production, but rather as an extension of our freedom. Dependence on excessive material production has proven to be unsustainable and yet failed to lead people to live happier. To live happier,

we have to be more not to have more. This view of development has its technological consequences. Societies have to be provided with new set of tools to maintain its productive life. In this case, a vibrant learning culture of a community is key to develop new tools for sustainable production.

Convivial technology was proposed by Illich in his attempt to provide alternatives for living sustainably. His thinking came almost at the same time as Schomacher introduced *Small is Beautiful* as a very serious criticism to a growth-obsessed world. Schomacher has indicated that this growth-obsessed model of development is clearly unsustainable and he proposed appropriate technologies to retool societies. A group of scientists in MIT has produced a report to the Club of Rome indicating that the then development model will lead to global environmental collapse by the end of the 20th centuries. This prediction has proved to be accurate enough to describe the present global environmental condition.

Technology itself can be defined as a system of capabilities to create values. The capability to create values is not merely dependent much on hard engineering artefacts, but also to a softer, social set up such as institutions, rules and regulations. In this case, schools and banks as institutions need to be further analysed. Technologies as an interaction between human and its surrounding materials develop in a certain social, economic and political environment. Technological development does not occur in a vacuum, in particular relevant to this digital era, but it occurs continuously in an information flood and cloud environment. Convivial technology as may have been perceived by Illich has to benefit from information and communication technology.

Schools are not convivial institutions since they lead to hamper informal learning. Schools transformed education into a scarce commodity, while learning is an emergent phenomenon that does not need school formalism. Schools have created a manipulated education demand leading to some form of learning dependence of the society. School has transformed the needs of learning into wants and demands for schooling. Banks are definitely not convivial institution too. Schools created the culture of debt for the banks to provide loans. At the end, community that lives on debts will ultimately lose its freedom.

3 RETOOLING THE COASTAL COMMUNITY

Since technology is a result of intimate interactions between human and the surrounding materials, this interaction has to be observed much more closely. The most fundamental interaction between human and the surrounding materials is learning. So, learning is fundamental to convivial technologies. In particular, when learning is replaced by schooling, this interaction has led to extractive, exploitative kind of technologies that we see today, degrading our independence and environment. Our so called modern way of life is characterised by hyper-consumption driven by unsustainable, high-energy technology. This has also led to unhealthy, instant life styles, and, more seriously, breakdown of our family values.

So, deschooling of our coastal community is the first step in developing convivial technology to retool the community. Top-down, standard quality-obsessed mass forced schooling formalism has to be replaced by a more informal, flexible, bottom-up, relevance-orientated, self-organized learning nodes in a learning web. Mass forced schooling has deprived subjects from their freedom and led them to mere factor of mass production. Schools are in fact designed, from their very beginning, as a technocratic instrument to prepare mass labours. Saying that schooling is a mean to educate subject is a public deception. As what Gatto (2007) said, what really happened with mass schooling is the miseducation of the mass.

Developing a healthy learning culture via learning webs is the first step to retool our coastal community. (Mitra, 2010) has proposed Self Organized Learning Environment (SOLE) as an alternative to schooling system. This is a community-based initiative in which collaborative efforts are geared to foster informal learning in small scale units. There is no formal and rigid curriculum determined by a central authority. The most important SOLE in a typical learning web is family as both an educative and productive entity. A healthy family is the basis for the development of convivial technologies.

Learning activities that cannot be performed by family are to be taken care of by mosques in a typical Indonesia muslim coastal community. Mosques can function as resource centres with library collection and internet access. A simple carpentry and woodworking workshop can be placed in the mosque areas for young people to learn practical skills required by the surrounding community. Various engineering artefacts can be produced in the workshop

to equip the community to cope with upcoming natural disasters. Mosques can be repositioned to function as a platform to facilitate coordinated responses in cases of emergency.

As a simple example of an unsustainable, high-energy technology is the widely inappropriate use of concrete for buildings in coastal community in Lombok. This technology has proved to be useless in facing earthquakes. The use of massive concrete structures in coastal buildings such as governmental offices, mosques, market, terminals and private housings is only at present proved unjustified. Concrete and its reinforced form is heavy, unfriendly to the environment (requires lots of water in its production) and vulnerable to tension resulted from earthquake motion. The use of light structures using bamboo or *glugu* (coconut tree) which are readily available locally is very much better and earthquake resistance. The widespread perception that concrete structures represent modern living is misleading.

Coastal urban areas are increasingly crippled by traffic jams resulted from inappropriate use of private cars and motorbikes. Private cars are definitely not a convivial technology. This also represents a serious inequality in energy consumption leading to areas left behind in development. This is incorrect terms since what actually happens is that planners have intentionally left the areas.

We propose a wider adoption of transit (the use of bodily metabolics) technology rather than transportation technology to provide sustainable mobility to coastal community. The use of bikes and horse-pulled buggy is highly recommended especially in small islands where speed is not a necessity. The limited resource of energy such gas and oil can be used for other, productive purposes. The use of wind and solar energy are to be developed to support coastal and small island development. Information technology application to promote better bargaining positions of farmers and fishermen in trading their produce is also highly encouraged.

We also propose the development of Integrated MultiThropic Aquaculture (IMTA) for coastal areas in small islands. This will shift fish catching activities to marine aquaculture. A marine tourism initiatives can also be built upon IMTA..

4 CONCLUSIONS

A convivial technology for coastal development has been briefly discussed with several examples for

application. Schools and banks are to be closely observed since they are not convivial institutions that make it difficult for people to develop convivial technologies. IT will be largely convivial since it promotes creativity, sharing and collaboration. The selection of appropriate technology needs to be formulated within the context of promoting a more equitable development throughout the archipelago. This will also create values and jobs for farming and marine aquaculture activities as the bases for a possible tourism development.

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