



Managing Cross-Sectoral Coordination in Accelerating the Sustainable Development Agenda

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Building on my previous editorial notes on sustainable development themes, I would like to expand our discussion on how the concept of cross-sectoral coordination can be a booster for the sustainable development agenda. The Sustainable Development Goals (SDGs) established actions to end poverty, improve health and education, and promote prosperity and well-being by considering environmental sustainability, which requires value changes, institutional changes, and cultural adjustment. Managing cross-sectoral interests with coordinated aims, strategies, and instruments is essential to overcome complex problems and develop more comprehensive solutions in accelerating SDG programs. Creating a more integrative manner to enhance the effectiveness and efficiency of public policies are key concepts for optimizing the benefits and impact of development outcomes. This policy integration and coordination is crucial to enhancing sustainable development programs, which balance economic advancement, sustainable ecosystem management, and environmental protection; therefore, it requires an inter-sector approach and coordinating mechanisms for all programs and projects.

In fact, many complex development agendas often require the coordination and integration of cross-sectoral policies to produce better program outcomes. Policies that cross sectors can be challenging to implement since they require coordination and may create conflict because of the different interests of sectoral actors. Yet, the collaboration of actors in different sectors may stimulate processes of policy and organizational learning, leading to better policy design and more efficient implementation.

In terms of producing optimum benefits of project or program development, interrelationships among sectors is important. The quality of a project or program outcome is a result of the quality of the sectoral internal properties that will be used to evaluate value for money (i.e., worth perceived by stakeholders). For example, the difference between a sustainable and a traditional highway project is to be found through the relationship between the co-creation of the economic benefits output and the quality of secondary properties such as urban, industrial, or tourism development, connections to other transportation infrastructure modes (e.g., airport, seaport), and so on. Each sector's policy is also the result of various influences such as productivity, job creation, profits, and the environment. These influential factors are affected by relationships to other moderating variables such as financial constraints, poor project management, and a lack of commitment. As such, we can set about searching for advantages and better direct our new project or product development process if we can anticipate which aspects of design are

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more attractive to stakeholders—their perceived worth. Integrating benefits resulting from cross-sector coordination will boost project or program performance. Therefore, comprehensive planning for infrastructure development requires cross-sectoral coordination, which means that all sector-specific actor (from the ministries of transportation, public works, tourism, agriculture, industry, and the environment, to the private sector) preferences and interests must be coordinated and integrated. This coordination and integration will then be evaluated based on the project's success in optimizing its benefits and usage. Furthermore, an underground infrastructure tunnel that will be used to overcome congestion, reduce flooding, and increase transportation accessibility in one public railway and stormwater infrastructure (PRASTI) tunnel will arguably create more benefits in terms of project efficiency and effectiveness, have greater economic impacts, and enhance the feasibility of social infrastructure projects such as flood control, compared to separate development of each project.

Science and technology development plays a significant role in achieving sustainable development by improving the efficiency and effectiveness of new and more sustainable approaches to development. Investments in green technology, efficient and effective processes, safer materials, and improved performances and outcomes are some results of such development. Technological development in utilizing renewable energy resources, building urban water systems and sustainable public infrastructure, increasing food production, and producing environmentally friendly materials and products are among the pathways by which technology will significantly contribute to achieving sustainable development targets.

Accelerating Science and Technology Development

The improvement of technologies that produce alternative methods, techniques, and end products is required to accelerate various developments in all research areas. In this context, this edition presents twenty papers dedicated to systematic and empirical research in science and engineering that fosters science and technology development.

The first paper, written by H.F.L Garcia and N.L Mejia, presents the mathematical model in a bubble column for the increase of *Arthrospira platensis* and the formation of phycocyanin. The authors argue that the model facilitates the examination of optimal carbon delivery, as well as the light input in several *A. platensis* culture conditions for phycocyanin production.

The next paper, written by R. Wahyuningsih, R. Adawiyah, A.S. Hoemardani, R. Sjam, E. Yuniastuti, D. Imran, E. Miranda, S. Djauzi, M. Tugiran, A. Hariadi, and S.S. Surja, describes the use of the touch biopsy method for the diagnosis of invasive mycosis in patients with AIDS. The authors argue that touch biopsy appears to allow early intervention with appropriate antifungal therapy.

The third paper, written by P.U. Prayikaputri, P.K. Jiwanti, M.A.F. Nasution, J. Gunlazuardi, E. Saepudin, Y. Einaga, and T.A. Ivandini, examines the micro-band boron-doped diamond electrode in capillary electrophoresis for the simultaneous detection of adenosine monophosphate (AMP), adenosine diphosphate (ADP), and adenosine triphosphate (ATP). The authors argue that the method can be applied to human urine samples injected with three adenosine phosphates.

The fourth paper, written by L. Sukeksi, Iriany, M. Grace, and V. Diana, investigates the characterization of the chemical and physical properties of bar soap with different concentrations of bentonite as a filler. The authors argue that the five soap formulas have zero free alkali content and a pH ranging from 8.7 to 8.8, which indicates that the resulting bar soaps are extremely safe to use.

The fifth paper, written by E. Kusrini, K. Ayuningtyas, D.P. Mawarni, L.D. Wilson, M. Sufyan, A. Rahman, Y.E.A. Prasetyanto, and A. Usman, evaluates the use of micro-structured materials for removal of heavy metals using a natural polymer composite. The authors argue that the different structure and composition of hydroxyapatite/chitosan (HAP/CHN) composite shows adsorption abilities and applicability in the development of new nano- and micro-structured materials.

The next paper, written by S. Elystia, L.R. Saragih, and S.R. Muria, examines the interaction between *Chlorella* sp. and bacterial consortium for microalgae growth and lipid production. The authors argue that treatment with the addition of 1% bacteria is able to produce lipids and the efficiency of chemical oxygen demand (COD) removal.

The seventh paper, written by L. Riadi, A.D. Tanuwijaya, R.R. Je, and A. Altway, determines the effectiveness of the Advanced Oxidation Technology (AOT) method by calculating COD removal of wastewater. The authors argue that Fenton treatment is feasible in reducing COD in wastewater.

The eighth paper, written by R.F. Darmayanti, A. Susanti, F.A. Setiawan, M.F. Rizkiana, M. Muharja, B.B. Aji, M.G. Prasiefa, L.T. Dewi, and Z.A. Yanti, presents the exploration of starch sources for refresh process in acetone-butanol-ethanol fermentation by *clostridium saccharoperbutylacetonicum* N1-4. The authors argue that sweet corn produces the highest butanol concentration, productivity, and yield.

The next paper, written by C.W. Purnomo, M. el Mawaddah and S. Bayonita, describes COD removal from rubber industrial wastewater using an anaerobic fixed bed reactor. The authors argue that a high reaction rate constant and high COD removal of more than 90% is achieved when the reactor is operated using immobilized media and Fe(II) addition.

The tenth paper, written by H.SB. Rochardjo, Fatkhurrohman, A. Kusumaatmaja, and F. Yudhanto, analyzes the fabrication of nanofiltration membranes made from polyvinyl alcohol (PVA) nanofibers reinforced with ramie cellulose nanocrystal (CNC) using the electrospinning method. The authors argue that the addition of 5% CNC ramie fiber has a positive impact on the tensile strength and elongation of the nanofiber membrane.

The eleventh paper, written by R. Suwondo, L. Cunningham, M. Gillie, M. Suangga, and I. Hidayat, presents model parameter sensitivity for structural analysis of composite slab structures in fire. The authors argue that the presence of the composite slab increases the fire resistance of the frame by 50% compared to the frame without the concrete slab.

The next paper, written by A.A. Rahman, S.S.S. Yahaya, and A.M.A. Atta, presents robust synthetic control charting based on normality assumption. The authors argue that the synthetic parameters should be attained to reflect the use of a modified one-step M -estimator, its winsorized version, and the median for Phase II.

The thirteenth paper, written by A.A. Agus, G. Yudoko, N. Mulyono, and T. Imaniya, investigates online shopping consumer and seller behaviors on e-commerce platforms during the Covid-19 outbreak. The authors argue that customer experience is positively affected by e-commerce platform performance.

The fourteenth paper, written by J.A. Al-doori, N. Khmour, E.A. Shaban, and T.M. Qaruty, examines the impact of Covid-19 on the economy and food supply chain. The authors argue that Covid-19 has negatively affected the inflation rate and the human development index rate, thus disturbing the economy and food supply chain.

The next paper, written by L.R. Saragih, M. Dachyar, and T.Y.M. Zagloel, presents the transformation of business processes in the customer domain in a telco company's systems operations. The authors argue that the transformation model assists in managing contacts, managing requests (including self-service), and determining customer order feasibility.

The sixteenth paper, written by W. Ongcunaruk and P. Ongkunaruk, presents a construction heuristic for a bin packing problem with time windows. The authors argue that the algorithm can be used as a decision support tool for a company and thereby reduce computational time and human error.

The next paper, written by E. Sutanto, S. Nurwahyuni, R.T. Yunardi, and G. Escrivá-Escrivá, examines the link between induction voltage from various electrical loads. The authors argue that the adjusted threshold voltage for best transition from normal condition over the leakage current condition has been determined to indicate a change of cut-off point for each different load.

The eighteenth paper, written by A.H.Y. Sa'd, H.H.Y. Saad, and A.A.A. Wahab, examines the maximal minimum hamming distanced codes in orthogonal frequency division multiplexing (OFDM). The authors argue that the proposed algorithms can generate a multiple set of distance codes that can deliver the same performance.

The nineteenth paper, written by R. Teguh, A. Lestari, B.J. Louhenapessy, H. Hayasaka, and R.E. Wibowo, presents a peatland fire geotagging photo for investigation tool using a smartphone. The authors argue that online citizen reporting can be used in law enforcement and by local governments and fire patrols to conduct monitoring, reporting, and verification and thus reduce the risk of a peat forest fire.

The last paper, written by A.H. Muhammad, D. Paroka, S. Rahman, and M.R. Firmansyah, presents the effectiveness of the configuration design of a twin rudder system on the course-keeping ability of a ferry ship under wind conditions. The authors argue that applying the twin rudder system to ferry ships improves their course-keeping ability in wind conditions, reducing ship deviation and increasing ship speed.

I hope that this edition of IJTech conveys some new insights into the way we conduct our research. I am pleased to accept and respond to any comment or enquiry you may have on the direction and content of IJTech, and I invite you to join us in this venture by sending your work for consideration.

With warmest regards from Jakarta,



Dr. Mohammed Ali Berawi
Editor in Chief