



**PENJAMINAN &
INFRASTRUKTUR**
Guarantee & Infrastructure



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Fakultas Ekonomika dan Bisnis
Universitas Gadjah Mada

COMPENDIUM TASK FORCE 8

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PT. PENJAMINAN INFRASTRUKTUR INDONESIA



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Memandang perlu adanya keberlanjutan dari dokumentasi pembelajaran kritis terhadap isu infrastruktur global dari berbagai lembaga think tank nasional maupun internasional, PT Penjaminan Infrastruktur Indonesia (Persero) dengan didukung oleh Lembaga Penelitian dan Pelatihan Ekonomika dan Bisnis, Fakultas Ekonomika dan Bisnis Universitas Gadjah Mada (P2EB FEB UGM) mempersembahkan sebuah publikasi yakni *Compendium Policy Brief Task Force 8* sebagai referensi perumusan kebijakan melengkapi *T20 Communique* yang telah diterbitkan terlebih dahulu oleh T20 Indonesia.

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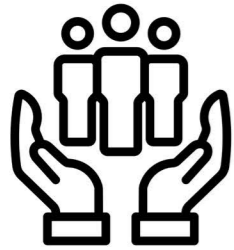
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Fiscal Policies for Gender Equality

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ABSTRACT ✨

As laws in many countries are being reformed to advance gender equality, many challenges remain due to implicit bias in law, unchanged social norms and especially since the Covid-19 pandemic exacerbates all existing inequalities (Rigoni et al., 2021).

Preventing economic distortions and providing for gender equality should be a main goal that could be achieved not only by promoting labor laws and ensuring welfare benefits, but also with the design of a tax-benefits system that could address those issues.

A gender-sensitive tax-benefits system would become a permanent safeguard policy for gender issues, promoting gender inclusion.

CHALLENGE ✨

As part of any infrastructure development project, there is a need to ensure that the people and the environment are protected from potential adverse impact. The safeguard policies are a mechanism to address environmental and social issues in a project design, implementation and operation.

Those safeguard policies should include provisions on gender issues, as Gender Equality is not only a fundamental human right, but a necessary foundation for the future. Besides, failing to achieve it costs us up to 16% of world income every year (Ferrant et. al., 2016).

In the specific context of government revenue collection, gender balance is often neglected as a policy rationale. Even if tax provisions do not explicitly disadvantage women to men, they do not correct gender differences, and they do not address the implications of Covid-19 in the increased women's unpaid work burden as a result of the closure of schools and childcare facilities (Ferrant, 2014). "Ipsos data from January 2021 shows that a longer "double-shift" of paid and unpaid work in a context of school closures and limited availability of care services have contributed to an overall increase of stress, anxiety around job insecurity and difficulty in maintaining work-life balance among women with children" (WEF, 2021).

Preliminary evidence from the World Economic Forum's Global Gender Gap Report 2021 suggests that the health emergency and the related economic downturn have impacted women more severely than men, partially reopening gaps that had already been closed. In just two (2) years' time, the global gender gap has increased by a full generation, as women will have to wait for gender parity more than 135.6 years, which is more than the 99.5 years waiting expected before Covid-19's pandemic. (WEF, 2021).

As laws in many countries are being reformed to advance gender equality, many challenges remain. Women are less likely to work full-time than men, and are less likely to progress in their careers. Further, there is a substantial gender wage gap, which evolves into an immense gender pension's gap.

We can find examples of this gender-bias clause in many tax systems. For instance, the US even named marriage penalty or marriage tax, the unwanted situation when the combined tax liability of a married couple gets higher than their combined tax burden if they had remained single. It is not just unwanted, it is also unfair and violates neutrality. Even if there is no evidence to support their effect on whether a couple will marry, it may affect how much each spouse works (Congressional Budget Office, 1997). Studies have found that "the individual income tax is typically not marriage-neutral, and ... suggest(s) that, since the early 1970s, the average family has incurred a marriage tax that has generally tended to rise over time" (Alm and Whittington, 1996). Even the US Treasury measured it and detected many factors that affect it (US Treasury, 2015).

And still, it is not just a US issue. As a consequence of the highly progressive nature of income tax rates in Switzerland, people are usually suggested to get professional tax advice before getting married.

PROPOSAL ✨

The social and cultural norms that broadly cast men's roles as decision-makers and women's roles as caregivers, play a significant part in terms of the type of paid work into which women are channeled, and how that work is valued and remunerated. When women enter the formal labor market, their role as workers is often seen as subsidiary or supplementary to their principle role as "homemakers", so it impacts how women are paid, and in their career progression (King, 2017).

However, those social and cultural norms are not the only variable that influence on gender inequality.

There are some other underlying reasons to gender inequality that could be addressed, such as:

1. Divided labor market. Gender concentration on different job areas.

Women are overrepresented in low paid, insecure and (even) unsafe jobs within global supply chains, agriculture, textile and garment industries

2. Majority of men in senior roles

As senior jobs, theoretically, require long hours and constant availability, women are less likely not only to apply to those jobs, but also to be hired for them. Many employers would not even consider the possibility of hiring a woman for a job expected to grow in time (also known as myopic expectations). This affects not only mothers, but also women without children,

3. "Motherhood penalty" and caring responsibilities

As males are often seen as the "breadwinner" and women become mothers, women bear most of the family responsibilities and sacrifice in their paid work, accepting part-time or more flexible (and underpaid) jobs.

4. Private-sector estimation on costs of caring responsibilities

In countries where there is a mandatory employment-protected paid maternity leave in force, and it is more extended than the paternity leave (as it usually is), employers call upon the impact of that eventual paid leave in order to differentiate men and women applicants.

As anybody can see, some of these reasons are in fact the cause of others: the "motherhood penalty" and private-sector estimation on costs of caring responsibilities, push women to work in part-time jobs and different job areas, and close their access to senior jobs.

Even if there is no outright discrimination, we are in a vicious circle regarding closing the gender pay gap.

Progress in closing the gap has stalled in recent years, mainly because of Covid-19 pandemic. Nevertheless, we must acknowledge that the pandemic's effect is not limited to the quarantine period: "through the combined effect of accelerated automation, the growing "double shift", and other labor market dynamics such as occupational segregation, the pandemic is likely to have a scarring effect on future economic opportunities for women, risking inferior reemployment prospects and a persistent drop in income." (WEF, 2021)

In order to close the gap, we must take action. A non-discrimination clause will not be enough. Gender-positive recovery policies and practices are required in order to correct the actual discrimination in place. These may include:

1. In order to tackle the "motherhood penalty" and estimated costs of caring responsibilities:

- 1.1. World Economic Forum Global Gender Gap Report suggests further investments into the care sector and into equitable access to care leave for men and women (WEF, 2021).

In case the access to early childhood education and childcare cannot be secured in public facilities, a special deduction should be conceded to the working mother in their personal income tax returns.

It could even be argued that any payments due to taking care of children (for working mothers), should simply be deducted, as there are expenses needed in order to earn taxable income

It could even be argued that any payments due to taking care of children (for working mothers), should simply be deducted, as there are expenses needed in order to earn taxable income.

1.2. Globally, women can take on average just over three (3) months of leave (paid or unpaid) while men/fathers can take on average three (3) days. Among the top 20% of economies by gender parity in care leave, women can take more than eight (8) months and men more than three (3) months of care leave (WES, 2021, data from World Bank's Women, Business and the Law Database, 2021).

Recently, WHO urged quality care for women and newborns in the critical first six (6) weeks after childbirth (WHO, 2022). It is, the period when most maternal and infant deaths occur that needed care calls for a mandatory employment-protected paid maternity and paternity leaves of at least two (2) months.

Nevertheless, G20 should recommend a general nine (9) month-leave from childbirth in order to attend what we know as exogestation, the period when newborns, completely immature for living outside of the uterus, require permanent and free-demand breastfeeding, and skin-on-skin contact with their parents.

Implementing a mandatory employment-protected paid maternity and paternity leaves, which lasts just as long for both working mothers and fathers, could help to bring both parents to equal cost numbers when looked up by their future employers.

2. In order to tackle the divided labor market and majority of men in senior positions, incentives should be provided to employers who:

2.1. Enforce flexible work entitlements, part-time work and alternative work arrangements that support diverse workforces, among both men and women. This could help men to take home responsibilities, and equal women who are pushed to take those flexible and part-time work arrangements.

2.2. Advance more women into management and leadership.

However, as previously stated, there will still be some other social and cultural norms that cannot be addressed with specific measures. We also propose some other measures to be considered in order to reduce even more gender pay gap and get out of this vicious circle.

It is recently been suggested that explicit gender differentiation in taxation or gender-based taxation can mitigate the adverse effects of market failure that, implicitly or explicitly, discriminate against women (Coelho et. al., 2022).

3. Regarding personal income tax,

3.1. Countries with family-based taxation (also known as joint filing), and most countries that provide for a reduction in dependent spouse credit, ensure that the returning to activity of women after motherhood do not imply a bigger tax burden than the one due if they decide to stay at home.

3.2. Allow women special deductions or particular payments to ease the access to the care and feeding of babies and themselves as women, such as

- 3.2.1. Breast-feeding leave,
- 3.2.2. Breast-pumps, baby formula and diapers allowances, and
- 3.2.3. Women products allowances.

If we consider that nowadays WHO promotes children to be exclusively breastfed for the first six (6) months of life (WHO, 2022), when their feeding should be on a free-demand basis, and at intervals of not more than two (2) hours, it's clear that a short maternity leave is not enough.

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Yet, if we add that the same WHO also promotes continuing breastfeeding for up to two (2) years and beyond, and also eating safe and adequate complementary foods that must be introduced gradually, we can see that even an early back-to-work maternal reinstatement should consider the possibility of keeping up the provision of breastmilk, which can be accomplished by using breast-pumps and baby formula.

In baby care, the use of diapers is a necessity that can affect the family's economy, and it is also essential for the independence of working mothers. The same goes with that women products are recognized as a necessity for women to work and study. Their availability will improve women's access to the labor market.

3.3. Women should be allowed a special deduction and be taxed on a reduced rate, in order to compensate, at least partially, the gender pay gap.

Besides, if women face lower marginal tax rates than men, they will have stronger incentives to work and invest in skills, and they will likely be supported or encouraged to do so by their family members (Coelho et. al., 2022).

Even if it may look far-fetched, it is not really so. In Argentina, our Supreme Court ruled in a retiree income tax case, that all vulnerable groups are entitled to have a special treatment in taxes in order to confront the differential costs of living, and until the legal bodies accept that special treatment, they should be considered exempt. And despite this ruling applies only in the particular case in our legal system, its importance lies in the fact that our Constitution considers women and children also vulnerable groups, and it shows what a particular ruling to them could be.

Some worries had been raised against lower marginal tax rates for women, as it would be quite difficult to incorporate easy-to-apply law provisions for homosexual couples and non-binary genders, and then this differentiation may be perceived unfair: yet, we must work on them in order to reduce inequality as a whole.

4. Consumption taxes.

Reduced rates on breast-pumps, baby formula, diapers and women products, could be introduced if they are already imposed at a standard rate, and when governments are capable of following up the consequent and expected reduction of prices.

Finally, it should be considered that long-term impacts of gender pay gap include immense pension's gap in their retirements; therefore, if we don't tackle it today, the discrimination perpetuates itself.

A gender-sensitive tax-benefits system would not only have an immediate effect to the after pandemic's economic inequalities, but would as well become a permanent safeguard policy for gender issues, promoting gender inclusion and minimizing any other potential negative impacts.

"Greater female labour supply would add impetus to economic growth: a full convergence in the participation rate between men and women over 20 years could boost the GDP per capita growth rate ... On average, among OECD countries full convergence is projected to ... an equivalent increase in GDP of 12.0% by 2030." (ILO et. al., 2014)

"G20 countries have much to gain from increased female labour force participation in terms of economic growth and increased welfare ... To optimize the labour productivity potential of increased female employment, women should be fully integrated in the labour force, not subjected to discriminatory gender wage gaps and not involuntarily confined to part-time employment and to the most low-paid, low productivity and vulnerable jobs" (ILO et. al., 2014, page 3).

These words from 2014 still remain, as do the issues not properly addressed by the G20 yet. The G20 should lead the way to achieve gender equality.

"There are plenty of options for well-justified policy reforms that would contribute to gender equality. Tax policy may not always be the first-best tool to address each source of gender inequality, (yet) ... it is imperative that gender impact analysis be incorporated in optimal policy design" (Coelho et. al., 2022).



Mining Resilience Infrastructure Plan: Fundamental Scenario of Green Sustainable Development Strategy to Determine Smelter Allocation and Modelling Investment System in Sulawesi Nickel Mining Project

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ABSTRACT

Mining Resilience Infrastructure plan is a huge new agenda on earth now which collaborates among mining materials, energy power supply, technology adaptive system and economic investment model into integrating concession of mining activities related to human and environmental basic- data perspective's issues to resolve mining human disaster problem in the world. The consequences of high- rank raw materials supply and demand to industrial needed, unusual location of energy power supply, adding values technology and economical regional enhancement has been forced. All mining stakeholders should allocate the modelling plan among sustainable development strategy, source of energy supply, smelter technology facilities, and investment model. All will eventually create a mining community that are safe, productive, and peaceful. Sulawesi nickel mining project has approached it using a simultaneous plan to resolve the basic concept of resilience modelling data into representing upstream to downstream flow diagram discourses systems in nickel mining cycle process. The projects highlighted are Green Mining Optimization Strategy, combination and transition of energy supply commitment, environmental-sensitive analysis schematic model and smelter allocation investment plan. All methods will present green sustainable development strategy plan to produce nickel raw material and mineral processing target by considering green technology sustainable system, Mining energy Integration and renewable alternative power supply to ensure the ultimate smelter investment location project and socio-economic policy standard by creating a balance mutualism cooperation among mining communities, related government bodies and industrial investment business guarantee. Therefore, this research concludes that it could be finished in one packaging system of mining industrial resilience under the simlutenous modelling plan which means that mining, technology, environment, and human are united to form a green economy prosperity and life sustainability for the future.

CHALLENGE

Fundamental Challenges of Mining Resilience Infrastructure Plan will focus on a number of issues. Firstly, Green Mine optimization strategy pathway will discuss upstream to downstream nickel mineral resources process on sustainable discourses system in pra and post mining. This takes place in smelter plan and is related to technical assesment and policy standard that takes into account the smelter's basis as established innitially. Secondly, adding technological value will encourage all stokeholders to commit in green growth strategy issues by implementing energy adaptation recharge combination to transition to green technology standard as a form of compliance towards smelter plan investment. Thirdly, Environmental-Sensitive Management Model will present the correlation between mineral resource and energy alternative technology on mining project to encounter the energy crisis. It regulates the standard between mining stakeholders and government body by providing incentives and complying to green sustainable development. Lastly, Socio-economic Cooperation investment will help elaborate the correlation between mineral rich location, green technology development and local regulation. So far, the mining communities are unable to deal with energy shifting strategy future plan because of the level of education and technology. It is a complicated fact. Therefore, mental revolution toward green sustainable mining investment should be a root policy and a priority.

The simulation of case study of green sustainable concept as presented by PT Genba Multi Mineral, a nickel mining company in North Morowali, Central Sulawesi, Indonesia, is a role model of smelter investment model plant that is related to mine resilience infrastrucatur plan basic studies. It will represent the sustainable mining system which would be integrated among mineral resource and mineral reserve capacity. Moreover, water supply electrical energy and socio-economic investment on mining area will be explained in a number of methods. Firstly, Resource Based Industrialization Model which would be presented by the Green Mine Optimization Strategy of Smelter Resource Estimation on Electric Arc Furnace (EAF) tries to simulate the upstream to downstream nickel ore scenario in smelter process plant. Secondly, water electrical energy supply monitoring system estimates the electricity needed in EAF modelling system. In concept, water based function on smelter and the electrical system combination and materials are needed to exchange Wet Metric Ton (Wmt) to be Dry Kiln Product (Dkp) on EAF Model Design Plan. Industrial investment socio-economic efficiency mutualism system in a Smelter Plant by PT GMM will create a new supply chain management on Mining Bussiness Process to add value of nickel ore as a primary effort to conduct a new socio-economic development program in mining area. These methods will be integrated into a simulataneous system that could resolve a number of discourses on smelter industry and smelter industrial projects – especially because they often fail finding a stabilized model of engineering assessment for achieving an optimum performance.

All data will presented as a scheme of basic model focusing on Mining Resilience issues in the nickel mining project. The solution is as follows:

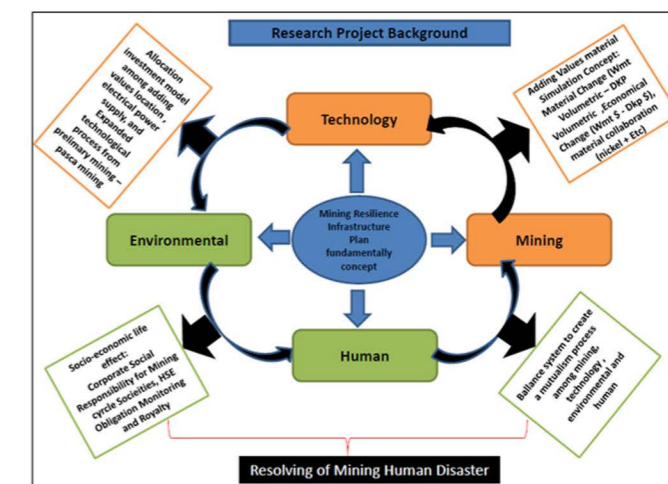


Figure 1. Mining Resilience Infrastructure Plan - Fundamental Concept

PROPOSAL

1. Assessing and evaluating Sulawesi nickel mining project as a means to build sustainable green growth of mineral resources. Securing sustainability by proposing ideas of mineral resource and reserve evaluation based on the legal standard, Detail Engineering Design Location, Land Utilization for sustainable mining project, Raw Materials and Mineral Processing supply chain management framework, Coastal Mining Areas regional strategy for shipping plan infrastructure of mine materials handling market system and other additional renewable energy resources development on mining concession.
2. The phenomenon of energy combination and transition from fossil fuel to renewable energy is inevitable and the commitment to integrate fossil fuel with water resource management system, solar photovoltaic and wind energy, as well as making automated transport mining production system or creating renewable energy source in mining project location to support green sustainable development should be a commitment.
3. High Cost of green sustainable investment project should be reassured and confirmed to investors and government body, especially concerning to Incentivize and subsidies regulatory standard guarantee policy formulation
4. Invoking the awareness of local communities towards green concept by referring to government and mining communities issues on existing project.

RELEVANCE TO G20

The Correlation Mining Resilience Infrastructure Plan To G20 Forum is that we have agree that there are a number of issues, especially energy transition issue between renewable energy and fossil energy in mining. Nickel is one of the core minerals for the future business plan that will help accelerate people's need on different product such as lithium battery. It will certainly bring a new transition from the fossil era to renewable era. The process of adding value of nickel will come from a nickel simulation process as follows:

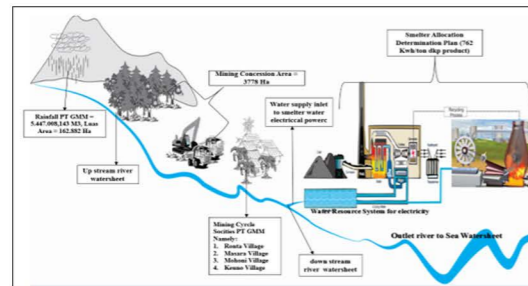


Figure 2. Nickel Simulation Process on smelter plant allocation model to adding values mineral market

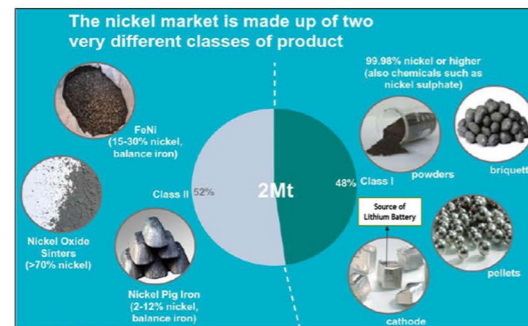


Figure 3. Class of Nickel Market Product especially cathode as the source of lithium battery

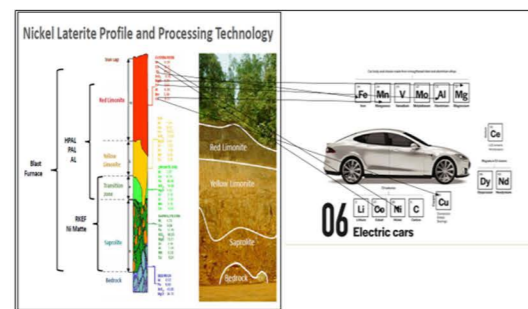
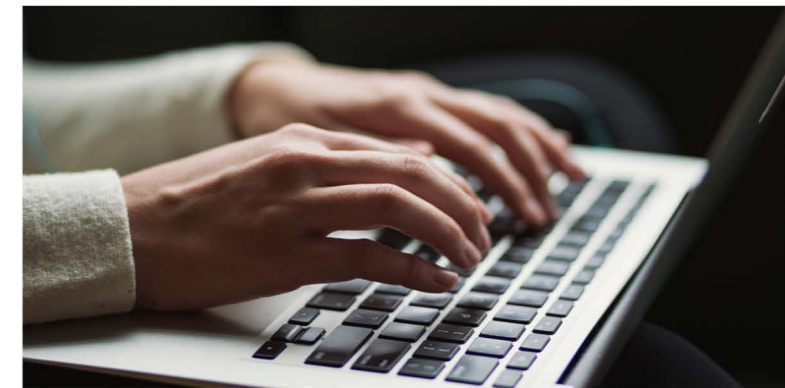


Figure 4. Nickel Mineral and Electric Cars Composition Model Shown The Domination Raw Nickel Mineral Zone on Electric Cars Industry as the future transition energy in the world

All figure process above has indicated that Mine Resilience Concept will keep the balance for the future of world energy, in which G20 Forum forecasts that Indonesia is ready to fulfill the daily need of nickel for electric cars - an achievement in the nickel industry. Indonesia is the home of nickel industry in the world and G20 as mediator can assist administratively and provide technical point of view of mineral industry to make Indonesia as a giant industry player in the future.



Spillover Effects of Digital Infrastructure and Financing Scheme Proposal for Digital Infrastructure Development

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ABSTRACT

The current COVID-19 pandemic has not only emphasized the crucial need of ICT (Information and Communications Technology) infrastructure development, but has also expanded government budget deficits in many countries. Therefore, participation from the private sectors is necessary to close the widening investment gap in ICT infrastructure. We are convinced that one of the measures to attract private sectors' involvement in ICT infrastructure is by creating a steady stream of income for the investors. Thus, this policy brief proposes a tax sharing scheme between governments and private sector investors of ICT infrastructure. Furthermore, to ensure the success of the proposed financing scheme, this brief also recommends the development of supporting hard and soft infrastructure as well as the digitalization of tax reporting systems.

CHALLENGES

Despite the increasing needs of ICT infrastructure development, the investment gap in that sector is widening. In the telecommunications sector alone, the gap is expected to reach more than USD30 billion in 2040 (Global Infrastructure Outlook, 2021). The reason for this gap of ICT infrastructure investment is the same as that of other types of infrastructures, such as the inability of many governments, especially which of developing countries, to fully finance their infrastructure needs. In addition, in many areas, investment in the ICT sector has been perceived as a private sector activity. This causes the ICT infrastructure development to focus on the needs of the growing urban middle class, leading to a deepening of the digital disassociation between urban and rural areas (Foundation & Association, 2018). However, the lack of digital infrastructure development in rural areas cannot be completely filled in by public finances which bring us back to the increasing needs of the private sectors' participation in ICT projects.

Consequently, governments have been turning to the private sectors for infrastructure investment. This has led to the use of partnerships between the public and the private sectors, or known as the public-private partnership (PPP). While PPP has been adopted by many countries as a method to finance infrastructure investment, it also has its own set of challenges. First, the construction of physical infrastructure is risky. If a construction takes longer than previously anticipated or if its costs exceed estimates, the increased burden is usually borne by the private sectors. Second, even after the project is completed, failures can still occur if demands for the infrastructure turn out to be less than projected. PPP projects are usually public goods (such as roads, bridges, electricity, water, and ICT infrastructure) where users expect to pay low fees. In contrast, the private sector is profit-oriented and may be in a position (by the PPP agreement) to raise fees in order to cover construction and operational costs. However, increasing user-charges may lower the consumers' demand. This mismatch in the needs of consumers and investors could lead to the failure of PPPs. This is also applied to the ICT infrastructure, as the most frequent explanations for the lack of internet use are related to digital literacy (69%), affordability (15%), and relevance (12%) (World Bank, 2021). Therefore, it is crucial to keep users fee relatively low.

To ensure the success of PPPs, it is essential to warrant the private sectors that their involvement in infrastructure investment will not lead to losses. It is important to realize that infrastructure development creates spillover impacts into the region, which means that the effects of infrastructure do not only benefit its direct users and investors, but also other parties that may be indirectly impacted by the infrastructures, such as the local governments through the increased tax revenues.

PROPOSAL ✨

Based on the above challenges, it is clear that in order to attract private sectors' involvement in digital infrastructure projects, the rate of return for the investors has to be increased. This policy brief proposes a way to create a steady stream of income for private sector investors, namely by sharing increased tax revenues brought by the development in digital infrastructure with the investors. In addition, this policy brief also suggests the development of supporting infrastructure, both hard and soft, as well as the digitalization of tax systems.

Proposal 1: Establish Tax-Sharing System between Governments and Private Investors of Digital Infrastructure

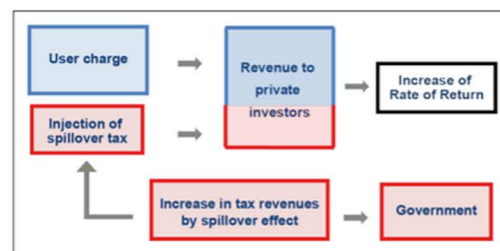
Previous studies have shown that infrastructure development is linked to higher economic growth, business revenue, and also tax revenues (Yoshino & Abidhadjaev, 2017a) (Yoshino & Abidhadjaev, 2017b) (Yoshino & Hoa, 2020). Focusing on ICT infrastructure, a forthcoming study by ADBI shows that a rise in the number of mobile-phone subscribers, which came as a result of a massive construction of mobile-phone towers in India, led to greater tax revenue (Yoshino, Siregar, Agarwal, Seetharam, & Azghaliyeva, Forthcoming).

In the past, these increased spillover tax revenues were absorbed only by the government. On the other hand, private investors of digital infrastructure continue to rely only on user fees as their source of income. As previously mentioned, the high reliance of private sector investors on user fees leads to the disproportionate development of digital infrastructure in areas where it is deemed unprofitable, such as in rural areas.

In order to bridge that digital division, private-sector financing is necessary. If increased spillover tax revenues were to be shared between the government and the digital infrastructure investors and operators, the rate of return can be expected to rise substantially. This will increase the profitability of such projects and incentivize the participation of private-sector investors.

Figure 1 illustrates how the sharing of the spillover tax revenues will push up investors' rate of return. Without the spillover tax revenues sharing from the government, investors rely on the user charges as their main source of income. However, if the government shares the spillover tax revenues, investors' rate of return will increase from only user charges to user charges and injection of spillover tax.

Figure 1: Spillover Tax Revenues increase the Rate of Return of Investors



Source: (Naoyuki Yoshino, Seetharam, Miyazawa, & Xu, December 2019)

In practice, this means that a tax sharing system between the government and private sector investors must be established. In order to do so, a transparent and reliable tax collection system, is essential. To be able to benefit from this concept, a country needs to have a decentralized tax administration system. Since in many countries both central governments and regional/local governments impose taxes, both governments must commit themselves to share spillover tax revenues with private infrastructure operators and investors.

Identification of the sectors that will benefit from the infrastructure project should also be conducted in advance. Furthermore, the computing and tracking process of the tax collection should be transparent and accessible by the public. Most importantly, the mechanism should be supported by a helpful regulatory framework. Theoretically, a trans-log production function will give accurate estimates of the spillover effects created by ICT. Studies published in various sources have demonstrated this method on the case of the Philippines' STAR highway, Uzbekistan's railway, and Japanese high-speed railways (Yoshino & Abidhadjaev, 2017a, 2017b; Yoshino & Pontines, 2015). The same method can be applied to ICT infrastructure. Another plausible way to calculate the spillover tax revenues of infrastructure projects are by using econometric methods, such as difference-in-differences method. It can clarify incremental tax revenue caused by infrastructure investments. As for the amount of spillover tax revenues to be shared between the government and the private sector, a simple procedure could be to divide the increased tax revenues due to the infrastructure projects by half and half (50%-50%) between the government and the private entities.

It is important to ensure that the sharing of spillover tax revenues is publicly announced since the beginning of the project. Incremental tax revenues after operation compared to pre-construction period must be measured through robust empirical methods.

Going forward, the gap between actual tax revenues and the estimated ones can be used as an indicator of the possibility of tax evasion. This means that a transparent and accountable taxation system and enforcement will lead to an equalized society that can maintain stable revenues for the country. Computation of the spillover effects of digital infrastructure can lead to reducing tax evasions and loopholes.

Note that although in this brief we focus solely on ICT infrastructure, our proposed spillover tax sharing system can also be applied to any infrastructure projects, such as water supply, railways, electricity, and road

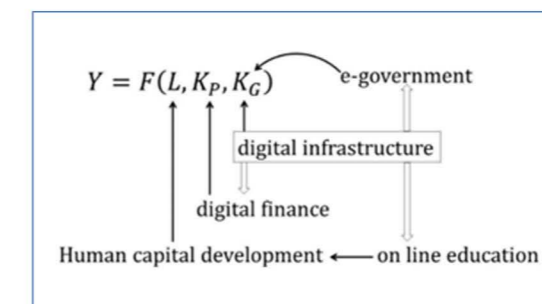
Proposal 2: Bridge the Digital Divide by Developing Supporting Hard and Soft Infrastructure

Other than spillover effects on tax revenues, there will also be "long-term" spillover effects of digital infrastructure. Figure 2 illustrates how the development of a nationwide network of digital infrastructure benefits the country, such as through:

- i. human capital development through online education and training programs,
- ii. efficient financial activities/sector through the development of online banking and other financial products and,
- iii. digital government which leads to the increased efficiency of government services.

The main proposal of this policy brief is to construct a scheme to finance digital infrastructure, namely by sharing the spillover tax revenues collected by the government with the investors of the infrastructure. However, as shown in Figure 2 which depicts the production function, the development of digital infrastructure will also affect other aspects, such as human capital development through an increased access to information and education. To put it simply, economic growth, which is shown by Y in Figure 2, is affected by human capital (L), private sector capital (K_P) and public/government capital (K_G). The development of digital infrastructure can enhance those three factors which, in turn, is expected to support economic development. Another example: the development of online education which makes high-quality education accessible to many students at various regions in the country. Online education can be applicable to adults, for instance, through training programs which may push up quality of human capital. Similarly, the expansion of digital infrastructure in the financial sector and in the government sector may widen access to financial products, increase financial literacy and also enhance the efficiency of government activities. These will contribute to further growth of the country and increase spillover tax revenues created by ICT infrastructure in the long run.

Figure 2: Benefits of digital infrastructure



Nevertheless, in order for this to be realized, it is important to establish supporting infrastructure, such as electricity, which is critical for the utilization of mobile/internet connection. According to (Kumar, Ihita, Chaudhari, & Arumugam, 2022), the broadband penetration rate in urban areas in India reached 93% while rural areas only had a penetration rate of 29%.

As reported by (Alexander & Padmanabhan, 2019), less than 50% of households in Indian villages enjoyed electricity more than 12 hours a day, while the remaining 33% received nine (9) to 12 hours, and about 16% received only one (1) to eight (8) hours of electricity a day. The lack of electricity in rural areas compared to urban ones may also be a contributing factor leading to the digital division.

Other than hard infrastructure, such as ICT and electrical infrastructures, it is important to develop the digital literacy of individuals in order to maximize the spillover effects of the development of ICT infrastructure. As previously mentioned, (World Bank, 2021) found that in low- and middle-income countries, nearly 70% of non-internet users are held back by their lack of digital literacy.

Although there is no fixed definition of digital literacy, much of the literature agrees that digital literacy is a multidimensional concept. (UNESCO Institute for Information Technologies in Education, 2011) describes digital literacy as a set of basic skills required for working with digital media, information processing and retrieval. However, it is important to note that processing content, evaluating, critiquing and synthesizing multiple sources of information is also a set of skills that are part of digital literacy. Therefore, the needs to enhance digital literacy skills is becoming increasingly important to ensure that not only people are able to access the information and contents available digitally, it is also to guarantee that they are able to process and evaluate such information.

This policy brief, thus, also proposes for the improvement of digital literacy. (The SMERU Research Institute, University of Oxford, United Nations ESCAP, 2022) identified three fundamental channels to improve Indonesia's digital skills, namely formal education, vocational training, and on-the-job training. The role of each channel is as follows: Formal education serves to broaden the access of students and educators to education, curriculum, and teaching quality. On the other hand, vocational training and on-the-job training serve as flexible and inclusive channels to upgrade digital skills outside of formal education and to upskill workers' digital competencies.

However, as previously discussed, in order to enable these channels to be fully utilized, robust digital infrastructure and sound policies which support the development of such infrastructures as well as supporting ones are necessary. Therefore, this brief proposes the development of infrastructure, both ICT and supporting infrastructures, along with the tax-sharing system to finance the development of such infrastructure hand-in-hand. The next proposal in this brief is also related directly to the first and second proposals, namely to digitalize the system to collect and report tax.

Proposal 3: Digitalization of Tax Collection and Reporting Systems

Although this policy brief highlights the need of participation of the private sectors in the development of digital infrastructure, the role of the government, through public finance, remains vital. The success of the tax-sharing scheme proposed in this brief depends largely on the ability of the government to collect, process, and distribute taxes. They must know how much companies and individuals earn in order to collect their taxes and who the recipients of the government benefits are, including the private-sector infrastructure investors as discussed in Proposal 1. The digitalization of the taxation systems will not only benefit the government by supporting them in the collection and distribution processes of taxes, but it will also be an advantage to the recipients of the government benefits.

OECD (2020) identified the opportunities of a digital transformation in the taxation systems, namely: real-time processes, transparency and trustworthiness, and digital identification. First, the digitalization of tax systems will enable tax administration processes to be done in real-time or close to real-time. Similarly, in several countries, tax authorities are already able to collect information on sales and wages in real time, giving them immediate insight into the state of the economy (Gupta, Keen, Shah, & Verdier, 2018). Second, the digitalization of tax systems will also increase its transparency and trustworthiness. Taxpayers will have the opportunity to check and question taxes assessed, paid and due. It will be clear which rules have been applied to which data, reflecting facts and circumstances. Finally, the development of digital identification systems, allows more accurate and cheaper authentication of an individual's identity, ensuring higher compliance to tax regulations and that benefits reach only the intended recipients.



Assessment and Financing Perspective: Global Citizens Need Smart City to Figure out Main Problems in Their Region

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ABSTRACT ✨

A Smart City is a city development based on Information Technology (IT) that meets human needs. It earns a "smart city" title for having the principles of smart government, smart economy, smart environment, smart living, smart people, and smart mobility. The development of smart cities in Indonesia is quite progressive since as many as 98 cities and districts in Indonesia participated in the Indonesia Smart City Program in 2021. In addition, the development of smart cities in the world is massively growing and the IESE Cities in Motion Index (CIMI) 2020 recognized that there were 80 countries with 174 cities around the world that have implemented smart cities based on the nine dimensional index.

Most smart cities emerge from continental Europe based on assessments such as human resources, social relations, economy, government, environment, mobility and transportation, urban planning, international outreach, and technology. The formation of a smart city cannot be separated from the problems that are often faced in a city such as increasing population and urbanization. Plus, the dynamics of change are so fast and research results show that about 50% of the world's population will live in cities (Senate Department for Urban Development and the Environment, 2015; Bakıcı, et al., 2013; Chourabi, et al., 2012). Thus, the city is faced with fulfilling human needs such as health, education, and public transportation to make the people gain their comfort, security, and happiness.

CHALLENGE ✨

In realizing a smart city, there are challenges to face, such as the availability of information data, smart-city security, large investments, information technology infrastructure, social adaptation, and application development. Moreover, the success of the smart-city concept must involve humans and the government in order to generate the community to actively criticize and give suggestions to have the direction of development and improvement of facilities in accordance with the objective. The government's commitment is needed as an initial step to realize the smart-city concept which can be measured by policies regarding the acceleration of smart-city development and the existence of fiscal space as a budget allocation in the implementation of smart cities. In addition, the government must pay attention to implement innovative financing in order to make smart cities successful in every city.

Additionally, the Covid-19 pandemic forces people to stay at home and carry out all their activities online, so digitizing all aspects is needed. The existence of digital technology makes it easier for humans to work quickly and efficiently. The emergence of the digital era is changing civilization and providing opportunities and challenges for humans. Digital transformation is a challenge that must be addressed by all countries so that humans can adapt to the digital era.

The community and the government may be facing various other challenges, thus requiring smart city concepts such as big-data issues for the public-policy making in health, education, and poverty. The government must be able to present big data to the public in real time and overcome the gap in data novelty in policy making. Making the right policies can create good transparency and accountability in order to have the public services perceived as being right on target by the public. Further, smart-city concepts are very relevant to the issue of climate change and food sustainability. The government must be able to mitigate the issue of disasters and the depletion of food stocks in the interest of people to feel sufficient and safe in every aspect of their lives. In regards to security, the smart-city concept can also integrate a country's security system to create a convenient environment in society by involving the police and the national army. Therefore, the smart-city concept is needed by every city around the world.

PROPOSAL

Smart-city development is the focal point to solve the problem of providing quality public services in a country. To create this for the community, the government needs to develop smart cities in all cities. There is a lot of benchmarking in smart-city policies in different countries. These issues should be the foundation of a country's development. Considering all community activities towards digital, smart cities have become one of the tools to improve the quality of public services.

THE BIG PICTURE

A Smart City is a city that focusing and aiming at all aspects of life from social communities to public services (Caragliu, Chiara del Bo, and Peter Nijkamp, 2009). The concept of a smart city is developing along with the existence of Information and Communication Technology (ICT), which makes it easier for a city to develop ICT innovations, governance, and new ways of living for its citizens. Smart city can also be said as a city system that is enhanced with the help of data and technology to achieve integrated management and interoperability and give a broad meaning to the form of social and political intelligence.

In its development, the smart-city concept has been widely interpreted as the use of ICT for improving city functionality and solving challenges in urban development. On the other hand, the smart-city concept can be interpreted more broadly, which emphasizes good-city governance, empowered city leaders, smart citizens, and economic resilience with the use of technology. The smart-city concept has been widely used in cities around the world to deliver public services, improve quality of life, and boost the economy. There are several cities in the world that have done smart projects to realize the smart-city concept, as follows:

Table. City Government Projects using the Smart-City Concept

Region	Project	Key Focus Areas
Europe	Sense Smart City (Skellefteå, Sweden)	Sensors to measure, monitor and communicate, and more efficiently allocate resources such as electricity, water, traffic and waste.
	Smart City Wien (Vienna)	Broad-ranging project incorporating education, buildings, transport, climate, people and administration.
	Smart City Málaga	Renewable energy, Smart metering, Smart distribution, Electric Vehicles
North America + Caribbean	Montego Bay Smart City Integrated Operation and Control Center	Integrated control center monitoring/controlling seven systems linked to transport, crime prevention and disaster prevention
	Smart City San Diego	Renewable energy generation, consumer data to manage energy use, Smart grids
Asia	Smart City Kochi	Provision of state-of-the-art infrastructure, environment and support systems to promote the growth of knowledge-based companies.
	Yokohama Smart City	Installation and management of energy management systems (EMS) in homes, office buildings and commercial facilities (e.g. factories). Linkage into a Central EMS.
	Dubai Smart City	Transport, Communications, Infrastructure, Electricity, Economic services, Urban planning, Government services.
Africa	City of Tshwane – Smart City	E-learning, health, public services and ICT access
	Smart City Joburg	A 'Smart and Caring City', broadband, public safety, integrated intelligence center for public safety, integrated and smart metering of electricity and water.

Source: Moir, E., Moonen, T., & Clark, G. (2014), processed by authors

In addition, based on the 2022 IDC Smart City Asia Pacific Awards, several countries have made smart-city innovations by focusing on the use of technology and innovation. These innovations certainly aim at making cities more livable, and offer new services and economic opportunities. The followings are the winners of the IDC Smart City Asia Pacific Awards 2022

Figure. IDC Smart City Asia Pacific Awards:



Source: IDC Smart City Asia Pacific Awards, 2022

The existence of the smart-city concept has an influence on the sustainability of people living. Some of the countries above illustrate the success of using the concept in improving the quality of life with IT support. In addition, smart-city innovation emerged along with the conditions and technological developments at that time. Thus, the IDC Smart City Awards divides 15 categories of smart-city concept initiatives, such as administration, civic engagement, digital equity and accessibility, economic development, tourism, arts, libraries, culture, open spaces, education, public health and social services, public safety next-generation emergency services, public safety-data-driven policing, smart buildings, smart water, sustainable infrastructure, transportation-connected & autonomous vehicles, public transit, ride-hailing/ride-sharing, transportation infrastructure, urban planning and land use, and public management.

SMART-CITY BUILDING FOR NEW FOUNDATION

The concept of a smart city depends on the problems and advantages of each city. Smart city must be able to realize sustainable development by integrating several elements that exist in urban areas such as economy, people, government, mobility, environment, and living (Griffinger et al., 2007). According to Nam and Pardo (2011), the critical success factors of smart cities are seen from technology factors, human factors, and institutional factors. This is also in line with the five key takeaways from the 1st OECD Roundtable on Smart Cities and Inclusive Growth (OECD Policy Paper: Smart Cities and Inclusive Growth, 2020) with the following description:

While the digital revolution is offering an unprecedented window of opportunity to improve the lives of millions of urban residents, there is no guarantee that the rapid diffusion of new technologies will automatically benefit citizens across the board. Smart-city policies need to be designed, implemented and monitored as a tool to improve well-being for all people:

- Building smart cities is not only the business of cities or the private sector. National governments can and should play an enabling role to support innovative solution delivery, capacity building and upscaling;
- Measuring smart-city performance is a complex task but is critically required. Advancing the measurement agenda calls for a comprehensive, multi-sectoral and flexible framework that is aligned with local and national strategic priorities and embraces efficiency, effectiveness and sustainability dimensions;
- Smart cities need smart governance. Business and contractual models need to adapt to rapidly changing urban environments and encompass a more holistic approach, sometimes re-regulate rather than simply deregulate, and leverage public procurement, including at the pre-procurement stage;
- Citizens are not only recipients but also actors of smart-city policies. Putting people at the center of smart cities means co-constructing policies with citizens throughout the policy cycle.

There are several assessment tools to identify the problems and advantages of each city. Smart City Index Master Indicators are used to assess and analyze cities developed by Boyd Cohen (2012) with changes and additions of indicators every year to keep up with the relevance of the times. In addition, there is CITYKeys which is used by European cities to measure the performance of the framework using the theory of Bosch, P. et al. (2017). There is also the Innovation City Index of 2Thinknow which uses a 3-dimensional approach, such as cultural assets, human infrastructure, and networked markets with a total of 162 indicators (2thinknow, accessed on 20 June 2022).

Table. Smart City Index Master Indicators

Dimension	Working Area	Indicator
Environment	Smart Buildings	Sustainability-Certified Buildings
		Smart Homes
	Resources Management	Energy
		Carbon Footprint
		Air Quality
		Waste Generation
		Water Consumption
	Sustainable Urban Planning	Climate Resilience Planning
		Density
Green Space per Capita		
Mobility	Efficient Transport	Clean-Energy Transport
	Multi-Modal Access	Public Transport
	Technology Infrastructure	Smart Cards
		Access to Real-Time Information
Government	Online services	Online Procedures
		Electronic Benefits Payments
	Infrastructure	Wi-Fi Coverage
		Broadband Coverage
		Sensor Coverage
		Integrated Health + Safety Operations
	Open Government	Open Data

Source: Cohen, 2012 and Smart Cities Council, 2014

Figure. IDC Smart City Asia Pacific Awards:

People	Planet	Prosperity	Governance	Propagation
Health	Energy & Mitigation	Employment	Organization	Scalability
Safety	Materials, Water, & Land	Equity	Community Involvement	Replicability
Access to (Other) Services	Climate Resilience	Green Economy	Multi-Level Governance	
Education	Pollution & Waste	Economic Performance		
Diversity & Social Cohesion	Ecosystem	Innovation		
Quality of Housing & the Built Environment		Attractiveness & Competitiveness		

Source: Bosch, P. et al. (2017)

It is important to be aware that leveraging big-data analysis to extract insights and information is a general concept, and that it applies to many fields, one of which is decision making involving multiple stakeholders (Batty, 2013 and Hoang, et al., 2019). The smart-city concept allows the government to make decisions based on data. Smart cities have the capacity to collect and use data correctly and relevantly. Government-policy formulations that are right on target can be prepared in order to resolve community problems. Looking at the experience of private companies such as the Lacroix Group in decision making, precise and quality measurement of data can be used as the basis for making investment decisions in urban architecture. The government needs to look more clearly when building a smart-city framework with a comprehensive framework aligned with the state strategy or city strategy. This comprehensive framework must be flexible and adaptable to various circumstances. For city accountability issues, The European Innovation Partnership on Smart Cities and Communities (EIP-SCC) recommends: i) aligning with city strategies; ii) conducting measurement over time; iii) developing the framework through a stakeholder engagement process; iv) opening up to future innovation; and v) supporting open reporting and cities' evaluation of progress (Caird and Hallett, 2019 in OECD Policy Paper: Smart Cities and Inclusive Growth, 2020). Meanwhile, city transparency can be done in providing inclusive information to the public on a regular basis.

THE CRUCIAL LEVEL OF SMART CITY CONCEPTS

Smart-city concepts have significant impacts on every city around the world. Smart cities must be included in the national strategic policies of each country by following each country's political actions. Empirical results show that smart-city concepts have proven to be able to answer global issues such as basic needs, social security, climate change, urban management, industrial development, and policy implementation which can be seen in the Table below.

Table. Empirical Result on Global Issue (Developed Countries vs Developing Countries)

City, Country	Empirical Result on Global Issue
Developed Countries	
Singapore, Singapore	Implemented Smart Nation in the form of national electronic health record, comprehensive online government services, effective learning and teaching, and ICT for Productivity and Growth (IPG) Program for SMEs.
Tokyo, Japan	Implemented smart grids to optimize the supply-and-demand balance system for buildings and area services, or creating new greenery (more precisely 1,000hectare of new greenery) such as city parks, riverside reforestation, and multiplication of roadside trees.
Seoul, South Korea	Provided Seoul Open Data Square in various sectors to address urban problems such as child-care services, public-transportation routes, bus arrival times, parking availability, weather conditions by region, and Seoul's recommended restaurants; all accompanied by maps, internet links, graphs or statistics.
Copenhagen, Denmark	Leveraged wireless data from mobile devices, GPS on buses, and sensors in sewers and trash cans to assess the state of the city in real time.
Oslo, Norway	Made zero-emission cars by providing electric public transportation and free parking.
Amsterdam, the Netherlands	Implemented sensor-based smart meters in housings and buildings to reduce carbon emissions by 40%.
Zurich, Switzerland	Applied UrbanSim as an open-source software that simulates land-use development in cities based on the choices of households, businesses, land owners and developers, interacting in urban real-estate markets.
Abu Dhabi, UAE	Applied hydroponic-farming methods to overcome the challenges of food needs along with population growth.
Miami, USA	Utilized data to address rising sea levels, high-energy consumption, and disappearing shorelines.
Developing Countries	
Santiago, Chile	Implemented E-bus by utilizing electrical energy due to the large number of carbon emissions.
Mexico	Initiated Insuring Coral Reefs to reduce coral-reef maintenance costs as 20% of coral reefs have been lost and another 15% are in danger.
Buenos Aires, Argentina	Optimized IT infrastructure and the SNAP platform for flood management since it is a port city built on nine rivers so that floods often occur.
Jakarta, Indonesia	Improved the efficiency and effectiveness of services through the Jakarta Smart City (JSC) due to the dense population in Jakarta, especially the issue of transportation and Covid-19.
Bandung, Indonesia	Overcame various basic problems in the city of Bandung, such as traffic, crime, employment and Covid-19.
India	Optimized IoT sensors and SNAP platforms for flood management in flood-prone areas.
Kuala Lumpur, Malaysia	Utilized ICT and Cloud Computing to design and develop smart-city architecture so that it can assist policy implementation.
Shenzhen, China	Used digital intelligence for transportation, industrial development, and infrastructure projects.

Source: Many sources. Author's analysis results. (2022)

Country Partnership with Grant Financing

Collaboration with several countries is a possible financing scheme to support the acceleration of smart-city development. A grant financing scheme is expected to be able to reduce the funding burden in a country. Sometimes a city has big challenges and responsibilities, but the budget is not able to cover the existing burden. In Europe, the development and maintenance of smart cities has been developed with the support of grant funds. For example, municipalities apply for European funding through consortia, where researchers across the European Research Area (ERA) work with city departments, businesses and/or non-governmental organizations within and outside the research Member States (Peters, 2006).

West Java is an area in Indonesia. The West Java Provincial Government has practiced the Penta-Helix concept which is running the wheels of government by cooperating with five elements, namely ABCGM (Academics, Business, Community, Government, and Media). The implementation of this dynamic bureaucracy does not only depend on the state budget and local budget sources alone, but the financing of foreign grant funds is very helpful in developing smart cities. Additionally, Indonesia has also carried out various smart-city development collaborations; with South Korea being one of the collaborators. This collaboration focuses on housing development in urban areas to make it affordable for everyone by applying the concept of Transit Oriented Development (TOD) expected to reduce the number of housing supply shortages (backlog) in Indonesia which has by far reached 11.4 million (Department of Public Works and Regional Planning, 2018). Moreover, this collaboration is a follow-up to the Memorandum of Understanding (MoU) on Smart Cities between the Indonesian Ministry of Public Works and South Korea's MOLIT at the Habitat III conference in Quito, Ecuador in 2016. The two parties formulated details regarding the preparation of policies and regulations, planning, and management for the smart-city concept, as well as capacity building in urban development and management in Indonesia.

Proposing Public-Private Partnership (PPP)

The speed of the development of a country or a city is very fast but state-budget funding is very limited since the government must fulfill other priorities besides infrastructure. Many governments turn to private sectors to design, build, finance, and/or operate new and existing infrastructure facilities (Farquharson, et al., 2011). Basically, the PPP scheme is a risk sharing between the government and the private sectors in all types of infrastructure projects (Grimsey and Lewis, 2002 and Lam, et al., 2007). Although a private sector provides equity and debt to build an infrastructure, the government can provide a guarantee of payment for the risk that has been shared proportionally with the private sector (Clifton and Duffield, 2006).

The OECD (2012) has provided recommendations covering three areas: (1) establishing a clear, predictable, and legitimate institutional framework supported by competent and well-resourced authorities; (2) grounding the selection of PPPs in value for money; and (3) using the budget process transparently to minimize fiscal risks and ensure the integrity of the procurement process. In addition, the OECD emphasizes the practice of contracts in a more comprehensive digital era, both mastery of contract users and socio-economic evaluation from society. Furthermore, the government must have the capacity to monitor their private partners to make infrastructure services excellently delivered.

Referring to the development of smart cities, the government can use the PPP scheme to build physical infrastructure that supports smart cities in every element that has been stated by Griffinger, R., et al. (2007). For example, the development of supporting physical infrastructure in the form of facilities for clean water, renewable energy, export ports, telecommunication broadband, and/or even universities. Naturally, the city can determine the physical infrastructure to build with reference to the results of the problems' assessment and advantages that have previously been mentioned.

WHAT COMES NEXT: POLICY ACTIONS & RECOMMENDATIONS FOR THE G20

The key messages in this note highlight the role of every city in the world in assessing their problems and advantages to be implemented in the ICT system which is called "smart city". The government can formulate and propose data-driven policy making to resolve community problems properly. We suggest that:

1. The smart-city innovation has the opportunity to be implemented in every city around the world to overcome several existing problems;
2. Collaborations between countries are needed in order to support the acceleration of smart-city development. Collaboration involves academics, businesses, communities, governments, and the media which can later transfer their knowledge from developed countries to developing one. Moreover, the industrialized nations may share their grant funding to the underdeveloped ones.
3. Financing scheme that can be proposed to emerging markets is the PPP scheme. It is able to share risk and finance proportionally between the government and consortia.

To fully realize the potential, G20 can support developing countries by:

1. Setting up networks under the G20 Finance Working Group or under the Urban 20 to support smart-city concept in developing countries; and
2. Providing collaborative research and funding in smart cities that can overcome several problems and leverage many advantages in every city around the world.



Aligning Sustainability Integration, Digitalization and Inclusivity for Green, Sustainable Recovery

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ABSTRACT ✨

This brief provides a roadmap for sustainable recovery that can aid policymakers in implementing sustainable recovery and improving the well-being of people. The roadmap will prioritize three areas of action: sustainability, digitalization, and inclusivity. The aim is to combine all three pillars and lay out the pathways for a positive and enduring change in the world. This brief demonstrates that encouraging a sustainable recovery necessitates the creation of an enabling ecosystem for financial mobilization aligned with sustainability, inclusivity and digitalization. Financial innovation, investment in green and social projects, market awareness, and synergies among the various sustainable finance segments will form the foundation for long-term recovery and create a vibrant and resilient economy. Despite the proposal's enormous scope, we will emphasize the involvement of the private sector and innovative financing solutions (including Islamic finance) in meeting the financing gap for investment in relevant infrastructure for all three pillars. We contend that innovative interventions and strategic alignment are required for recovery policies to converge with financial stability objectives.

CHALLENGE ✨

The recent COVID-19 pandemic has significant implications for national economies and the global financial system. This is in addition to the growing threat to the world's macroeconomic and financial stability due to climate risks and growing inequality. Furthermore, an estimated 77 million more people were living in extreme poverty in 2021, undoing some of the achievements in eradicating the problem (UN Report, 2022). Thus, many more countries are integrating sustainability objectives and green finance roadmaps into their national strategies, aiming to increase resiliency and shared prosperity. Notwithstanding the top-down approach, whereby green and sustainable finance frameworks and taxonomies are harmonised at the country level or via market-led collaborative actions, these measures are short of considering the development challenges resulting from the pandemic for a sustainable and inclusive recovery. Moreover, in many countries, these measures lack participation from the private sectors limiting their impact and negatively affecting financial and economic stability. Most governments, especially in developing nations, have narrow fiscal space and lack domestic liquidity to undertake the massive investments required.

Furthermore, the ongoing nature of this crisis necessitates deliberate policy approaches to long-term recovery, focusing on tackling economic inequality and environmental degradation. As a result, striking a balance between economic growth, sustainability, and inclusivity appears to be a critical requirement.

With the rising sustainability awareness, several new asset classes classified under sustainable finance have been developed. Activities labelled under this category take into account environmental and social considerations. Innovations include green, social and sustainability bonds/Sukuk, sustainable banking products, sustainable investment funds, etc. On the other hand, fintech innovations disrupt the financial industry with competitive and inclusive solutions that provide better access to capital. Blockchain, Artificial intelligence (AI), advanced data analytics, digital assets, and distributed ledger technologies (DLT) have the potential to accelerate sustainability recovery while promoting financial stability. Nevertheless, there is a need to ensure that any innovation and shift in policy must mutually reinforce all three pillars. Due to the limitation in fiscal space, integration in strategies and initiatives is imperative for creating balanced growth and increasing prosperity for everyone.

Therefore, massive investment is required, and governments alone will not be able to meet the financing gap. Thus, recovery initiatives need effective and innovative resource mobilization systems to attract private sector investments. Perhaps, more innovative solutions such as blended finance or debt swap could be considered viable options. The main concern is creating a framework with increased private sector participation, more creative solutions, and, more importantly, being aligned with financial stability objectives.

PROPOSAL ✨

The German development agency (GIZ) defines a green recovery as the "measures that combat the coronavirus crisis' social, economic and environmental impacts, which facilitates sustainable, resilient and climate-neutral change ". A green, resilient and inclusive development requires the establishment of a multi-dimension roadmap to promote the mobilization of private-sector investment in green and sustainable infrastructure. The recent COVID-19 pandemic has significant implications for achieving the sustainable development goals agenda. Therefore, recovery initiatives should prioritize green and sustainable projects to accelerate the transition to green economies and a better post-pandemic lifestyle. This should be included in the countries' national development plans and regional agendas and promote the use of sustainable finance instruments as viable tools to bridge the green and sustainable infrastructure financing gap.

The United Nations Environmental Program (UNEP) distinguishes five approaches to align the financial system to promote greater sustainability. These include enhancing market practice, harnessing public balance sheets, transforming culture, upgrading governance standards and directing finance through policy. Therefore, the financial industry can be critical in building a stable and prosperous economy when managed with accountability. This requires redirecting investments into economic activities and relevant infrastructure that deliver a good balance between economic, environmental and social objectives to promote human well-being and mitigate global challenges such as climate change, biodiversity loss, or inequalities.

In a sustainable economy, environmental and social factors are considered alongside economic objectives. The European Environment Agency (EEA) defines the green economy as an economy that generates increasing prosperity while maintaining the natural systems that sustain us. According to the UNEP, the green economy is an economic initiative aiming to improve human well-being and social equity while significantly reducing environmental risks and ecological scarcity. Underlying the green economy concept is the desire to achieve solid economic performance through sound environmental stewardship. This economic system is organized in a way that considers the adverse effects of business activities on the environment and ecosystem and includes internal remedial measures to stop or reduce these effects while engaging in economic activities (Mutanga et al., 2013). On the other hand, a greater emphasis should also be given to creating more opportunities for underserved segments of society. For instance, empowering the youth and women must be one of the key priorities to ensure that every human is given a chance to experience social mobility.

The ultimate goal is to promote economic growth while also achieving sustainability objectives. According to EEA, the interpretation of the green and blue economy system is that it recognizes the linkage among ecosystems, economy, and human well-being (EEA 2016). Thus, an enabling ecosystem for sustainable recovery should align the goals of sustainability, digitalization and inclusivity, as depicted in Figure 1 below.



Figure 1. An Enabling Ecosystem for Sustainable Recovery

SUSTAINABILITY ✨

Sustainable finance has gained popularity globally with more innovations in the banking and capital markets segments. According to Refinitiv, Sustainable financing totalled USD79.1 billion during the first half of 2020, with European borrowers accounting for 63% of overall sustainable lending. A growing number of financial institutions globally have voluntarily adopted and implemented a broad range of sustainability practices in response to emerging challenges and stakeholders' expectations regarding social and environmental impact. This growing awareness about the materiality of sustainability issues can also be noticed among regulators and policymakers globally with the issuance of various principles on sustainable and responsible banking and investments. These include Bellagio Sustainability Assessment and Measurement Principles (BellagioSTAMP), the Principles of Value-based Banking, the Principles of Responsible Banking, Value-Based Intermediation (VBI), and the Principles for Responsible Investment (PRI), etc.

DIGITALIZATION ✨

Digital Financial Services (DFS) are financial services (e.g., payments, remittances, and credit) accessed and delivered through digital channels, including via mobile devices (IMF, 2020). Digital Transformation has been a critical focus area to most financial institutions globally, with expected benefits of improved customer engagement and satisfaction, cost efficiencies, better resource utilization, and more automation. Key digital transformation technologies include Artificial Intelligence (AI), Near Field Communication (NFC), Video Chat, and Augmented and Virtual Reality.

The recent COVID-19 pandemic has significant implications for national economies and the global financial system, in addition to hindering the achievement of the sustainable development goals (SDG) agenda. The spread of COVID-19 and related government lockdowns led to a sizeable increase in the rate of finance app downloads (Fu and Mishra, 2021), accelerating digital transformation by many institutions globally.

The potential and risks of digital finance to enhance sustainable finance are increasingly recognized both internationally and nationally (UNEP Inquiry, 2018). The G20 Green Finance Study Group (GFSG) identified various barriers to scaling and deploying sustainable finance throughout its work. These include information asymmetries, limited analytical capabilities and maturity mismatches. Digitalization can accelerate sustainable finance in three ways: First, fund mobilization for sustainable development. Second, improvement of the use of funds for social and environmental impact. Third, financial inclusion which directly affects financial stability (Banna and Alam, 2021).

INCLUSIVITY ✨

The recent pandemic has revealed the vulnerability of society's disadvantaged groups. Many people struggled to cope with the pandemic's negative consequences. In many emerging nations, a substantial workforce is employed in the informal sector and gig economy. Furthermore, many were paid daily. As a result, a considerable portion of the population lacks access to social safety. There is no social security to compensate for job loss or access to unemployment benefits. This problem is exacerbated in rural regions due to a lack of essential facilities such as banking, healthcare, and digital connectivity.

On the other hand, high levels of inequality, particularly inequality of opportunity, can have significant societal consequences. The entrenched disparity of results can significantly hamper individual choices. Initiatives that provide chances for rural and minority socioeconomic groups should be prioritized. Adopting diversity and equality principles is critical for uniting a varied collection of individuals into a common narrative. Everyone should have equal access to high-quality education, healthcare, financial resources, and, most crucially, social mobility and protection.

POLICY RECOMMENDATION ✨

Aligning sustainability, inclusivity and digitalization for a green and sustainable recovery requires a clear roadmap at the national and regional levels, with its key pillars being integration, innovation, awareness, impact assessment and collaboration, as shown in Figure 2 below.

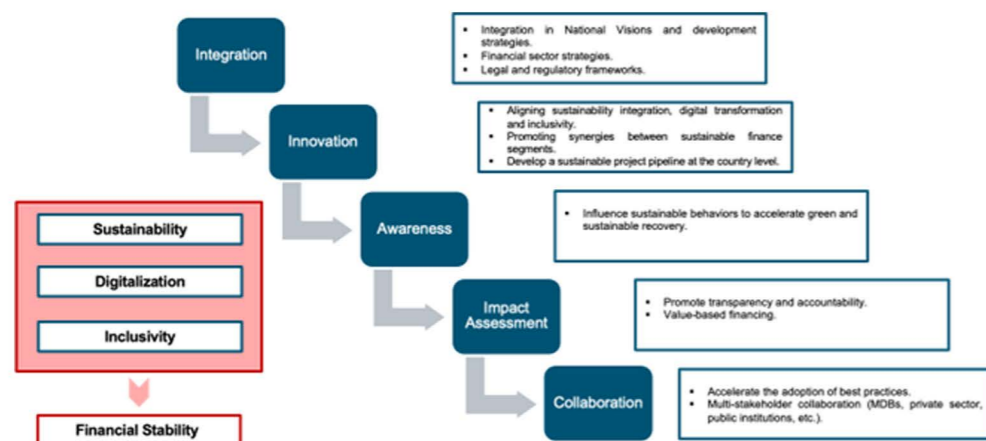


Figure 2. A Roadmap for Green and Sustainable Recovery

INTEGRATION ✨

Promoting a green and sustainable recovery requires the integration of the goals of sustainability, digitalization and inclusivity in the country's national visions and development strategies. A strategic step in this approach would be to prioritize sectors that support green and sustainable recovery in the short term while promoting a more holistic approach targeting the broader economy in the medium and long term. Once the strategic sectors are identified, sustainability actions and related investment plans must be identified, assessed, and implemented. For example, sustainable and digital finance roadmaps should be implemented at the country level to support financing the net-zero and energy-security targets identified in the sectoral analysis. Furthermore, infrastructure investment must be increased to bridge the gap between urban and rural regions. Also, urban-mobility living designs incorporating all three aspects should be taken into account when designing new cities.

On the other hand, supporting regulatory environments and transition through various incentive structures can promote redirecting private-sector investments to sustainable projects, including green infrastructure. In this regard, several governments have implemented enabling policies to support the expansion of impact investing. These include considering ESG factors in investment practices[1], sustainable reporting guidelines, responsible investing principles, etc.

INNOVATION ✨

Financing the post-covid 19 green recoveries requires significant infrastructure investment at the global level, which necessitates innovative and integrated approaches to mobilizing financing. The Organization for Economic Co-operation and Development (OECD) estimates that the public resources committed by governments to support a green recovery amount to at least USD 312 billion. Financial innovation requires to develop dedicated financing mechanisms for various green and sustainable assets. Innovations in digital sustainable finance products can accelerate the flow of capital to a more sustainable digital economy and help meet global policy objectives regarding climate change mitigation and achieving the sustainable development agenda for the overall societal good.

Capital markets can play a crucial role in mobilizing the resources needed to finance green projects and activities by connecting investors and issuers, whether private, public or semi-public. One of the instruments that have the potential to attract both Islamic and impact investors is the green and blue Sukuk. Although the green Sukuk market has developed significantly since its inception in 2017, most of the green assets financed consist of renewable energy, energy efficiency, clean transportation and green buildings. Thus, diversification is needed to address the funding needs of other green investments such as water, land use and marine resources, waste management, agriculture and different categories of clean energy.

On the other hand, developing green and blue Sukuk would also require integrating social and environmental considerations into financing and investment decisions and developing appropriate risk management tools, improving the risk perception of low-carbon and societal empowering projects, particularly in emerging economies. Mobilizing funds through social finance should be stepped up further to create community-based empowerment projects.

Another critical action area of the roadmap is the development of a pipeline of bankable green and blue projects highlighting the scale and scope of green and social investment opportunities. In emerging developing countries, infrastructure project pipeline lacks quantity and quality, leading to the lack of bankable projects G24 (2015). Micro-level projects must be institutionalized nationally to ensure scalability and efficiency.

The OECD defines a low-carbon and climate-aligned project pipeline as "a set of infrastructure projects and assets (accounting for the existing stock of assets), and future assets in early development and construction stages before project commissioning, typically presented as a sequence of proposed investment opportunities over time that aligns with and is supportive of long-term climate and development objectives."

Robust green and sustainable infrastructure project pipelines aligned with countries' long-term climate objectives can help mobilize private finance by identifying bankable and investment-ready projects. The OECD identifies six policy and institutional factors for effective government efforts in developing robust pipelines: Leadership, transparency, prioritizing, project support, eligibility criteria and dynamic adaptability OECD (2018). When developing project pipelines, governments should consider sector diversification, investor expectations and appetite, and their nationally determined contributions (NDCs).

AWARENESS ✨

Aligning sustainability, digitalization, and inclusivity requires dedicated communication strategies to promote awareness and societal accountability and accelerate the adoption of digital and sustainable behaviors by engaging investors, financial institutions, public institutions, donors and civil society on green and sustainable recovery issues.

Market awareness facilitates the mobilization of institutional savings and redirecting private-sector investments to green and sustainable infrastructure projects. Developing sustainability-linked instruments such as green Sukuk would also require integrating social and environmental considerations into financing and investment decisions and developing appropriate risk management tools, which will improve the risk perception of green and blue projects, particularly in emerging economies. Additionally, fostering literacy and instilling the value of sustainability should be promoted at all levels.

IMPACT ASSESSMENT ✨

Impact refers to long-term changes in people's lives that result from policymakers' resources and efforts, whether direct or indirect, planned or unforeseen. Economic, sociological, ecological, cultural, and political changes are possible. As a result, sustainable development tries to ensure that economic progress generates long-term prosperity for everybody. Since there is little budgetary room to make all of the necessary expenditures simultaneously, selecting initiatives that are important to stakeholders is essential. Green and social concerns most essential to policymakers' stakeholders should be prioritized. Next, they must construct a framework that articulates the nation's vision and path to driving environmental and socioeconomic reforms based on the materiality analysis. A balanced impact scorecard and harmonized taxonomies must be used to advise policymakers in monitoring green and social-impact performance and ensuring goal alignment. A consistent reporting standard should also be created to promote consistency in information sharing and improve transparency with stakeholders.

COLLABORATION ✨

Public-private sector collaboration can promote the development of innovative solutions to support financial stability while accelerating post-Covid 19 green and sustainable recovery. Innovations in new technologies such as blockchain have the potential to unlock green and sustainable finance to help meet global policy objectives. On the other hand, promoting synergies between the various sustainable finance segments such as Islamic finance and impact investing can accelerate private-sector fund mobilization.

Finally, proper monitoring by the regulatory authorities is crucial to avoid greenwashing and cybersecurity and data privacy concerns.

To illustrate the proposed roadmap, Table 1 below provides examples of the key actions that can be considered under each pillar:

Roadmap Steps	Examples of Key Actions
Integration	<ul style="list-style-type: none"> Integrate Net Zero targets in the development strategies of the identified sectors Enhance transport infrastructure Promote the development of climate-smart technologies Integrate sustainable finance instruments in the financial-sector development strategies.
Innovation	<ul style="list-style-type: none"> Promote the development of Green and sustainable sukuk. Implement a sustainable infrastructure project pipeline at the country level to attract private-sector investments. Support fintech innovations to promote inclusivity, transparency and traceability.
Awareness	<ul style="list-style-type: none"> Design a sustainability literacy strategy targeting the key stakeholders in identified sectors in pillar 1. Digital transformation education to promote efficiency and inclusion. Climate-awareness campaigns targeting small farmers, entrepreneurs, etc. Investor-awareness campaigns to support redirecting private-sector investments to sustainable infrastructure projects. Empower communities through specialized trainings such as agripreneur programs.
Impact Assessment	<ul style="list-style-type: none"> Implement a balanced-impact scorecard to monitor green and social-impact performance of sustainable infrastructure projects. Scale up digitalization to better monitor and report on the impact of projects financed. Implement sector-specific frameworks and taxonomies to promote harmonization.
Collaboration	<ul style="list-style-type: none"> Collaboration with Multilateral and National Development Banks to support initiatives targeting at-risk groups such as small farmers with green agricultural practices, SMEs sustainable entrepreneurship, etc. Public-private sector collaboration to promote the transition to a green economy. Banks-Microfinance institutions (MFIs) collaboration to promote innovative better outreach and inclusion.

Table 1. Examples of Key Actions for the Roadmap Implementation

INFRASTRUCTURE INVESTMENT AS THE CATALYST FOR SUSTAINABLE DEVELOPMENT ✨

As society evolves and becomes more urbanized. The necessary infrastructure must establish a regenerative and distributive economy. As we live in the Anthropocene epoch, we must strive to invest in infrastructure that is economically productive, socially inclusive, and ecologically sustainable. This is no longer an option; we must reverse the current trend by lowering our "ecological footprints" and becoming more robust to shifting social and environmental circumstances. Investment in highways, ports, trains, fibre-optic systems, water-treatment facilities, and electricity grid plants should be coordinated with a sustainable agenda at the macro level. We must be adaptable to any available technology to increase efficiency and reduce waste. At the micro-level, city planning should encourage residents to use public transportations, offer safe open areas for cycling, produce power using renewable energy, and implement a smart waste management system. To ensure that we can invest sufficiently, we need the cooperation of financial partners to channel money into long-term initiatives that promote a sustainable agenda while also providing a fair financial return.

RECOMMENDATIONS TO THE G20 ✨

The suggested roadmap could assist policymakers in strengthening their green and sustainable recovery measures while scaling up sustainable infrastructure projects' development and preventing pandemics' negative implications. Successful roadmap implementation requires political will, clear national commitments, and public-private partnerships.

This brief identifies seven areas that require policymakers' attention. These include:

- amalgamate the three pillars of sustainable recovery and focus on enhancing the well-being of underprivileged people and small businesses;
- integrate sustainable recovery targets in the national development plans and post-Covid 19 recovery strategies;
- leverage on synergies between Islamic and sustainable finance to mitigate the sustainable recovery financing gap;
- adopt blended financing strategies to attract private-sector investments;
- invest in the proper infrastructure to ensure social mobility and access to quality education and health care;
- harness the potential of social finance to create micro solutions for empowering communities; and
- Implement sustainable finance frameworks to promote the development of sustainable finance instruments such as green Sukuk.



Improving Governance in Major Infrastructure Projects

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ABSTRACT ✨

From an economic growth perspective, infrastructure is not only an enabling factor for development or for facilitating private investments and competitiveness across all sectors of national and regional economies, but can also be an attractive investment opportunity in itself. Although infrastructure investment opportunities are plentiful across developing countries, investors are not fully seizing them, often due to gaps in the enabling environment for such investment. The infrastructure sector presents specific risks to private investors, and since private participation in infrastructure delivery is a relatively recent form of procurement in many countries, governments do not necessarily have the experience and capacity needed to effectively manage these risks. Beyond case-by-case project preparation and financing, concrete, implementation-oriented guidance that can help governments identify and manage reforms is needed to make the broader infrastructure investment environment more open to private participation.

CHALLENGE ✨

What matters to governments around the world, and to the citizens they represent, is having in place high-quality infrastructure that supports the delivery of effective public services – in transport, education, health, culture, or any of the myriad of policy areas that affect people’s lives. Up to now, much of the debate on infrastructure has focused directly on the financing challenges – how to raise funding for infrastructure projects, by using national levers and accessing international markets – whereas the broader public governance dimension has been neglected. Poor governance is a major reason why infrastructure projects fail to meet their timeframe, budget and service delivery objectives. Public investment is generally a shared responsibility across levels of government.

Whether it is through shared policy competencies or joint funding arrangements, public investment typically involves different levels of government at some stage of the investment process. There are important challenges at both the national and subnational level to catalyze sufficient regulatory capacity to oversee the performance of infrastructure service delivery.

PROPOSAL ✨

In this context, the government has focused on the efficient delivery of public services, rooting out corruption and black economy, formalizing economy and expanding tax base, improving the ease of doing business, nursing the stressed commercial banking sector back to a healthy state, and stopping leakages through direct benefit transfers. It is our hope that this new approach will provide an inventory of readily implementable measures for the government departments and agencies both in the central and state governments. The attempt is to present a set of ideas that can provide the basis for a constructive public-private-personal partnership and promote center-state cooperation. Cities should dedicate a single-window facility for the urban poor to access basic services such as water supply, drainage and sewerage, and affordable housing in the form of dormitory and rental housing. Urban poor communities and slums, benefitted by area-based development (ABD) or pan city proposal (PCP) solutions, should be mapped in conjunction with improvements in parameters such as access to public assets and service deficit reduction including in the areas of education and health.

1. Pan City Proposal (PCP) or Smart City Proposal:

We need to build increased resilience into cities in anticipation of increased exogenous and endogenous pressures on their interconnected urban systems. A green recovery is about fiscal recovery while also improving societal resilience by transforming an economy through actions grounded on environmental sustainability.

Leveraging a green recovery to achieve resilient cities:

Urban resilience is the ability of an urban system to restore function after a shock or disturbance and withstand stresses over time without compromising the integrity of its system as a whole. We also acknowledge the conceptual tensions inherent in the term resilience as outlined by (and adopt) their definition: Urban resilience refers to the ability of an urban system and all its constituent socio-ecological and socio-technical networks across temporal and spatial scales to maintain or rapidly return to the desired functions in the face of a disturbance, to adapt to change and to quickly transform systems that limit the current or future adaptive capacity. When urban resilience is defined in this way, it has several implications:

Diversity, availability and distribution of transportation modes across a community and specifically greater walkability is known to improve community resilience in cities. To build adaptive capacity in cities, there is a need to transform governance to become more participatory, involving multi-level and multi-actor dimensions through the co-design processes in policy development.

Urban mobility can and needs to change: There is a large body of research focusing on the reduced travels resulting from the pandemic and associated restrictions on movements, and its impacts to improve urban air quality. Urban form and housing need to provide public benefits. There are important insights on how urban ecosystem services help to mitigate the spread of disease. Many papers have noted the connection between urban form and demographics and the spread of the virus and conclude that there are specific strategies to reduce the risk of future pandemics, such as enabling telework, ensure greater use of artificial intelligence in the built environment to create touchless technologies, promoting medium-density buildings rather than high-rise to reduce crowding, especially associated with socio-economic inequalities. In order to implement a green recovery in cities, urban planning needs to consider making green urban places more available and accessible. Reviewing what makes up quality green urban place must also be studied.

Production and supply chains need to be more resilient. In terms of production, there is a sense in several papers that the pandemic has created an awareness of urban vulnerabilities and therefore caused a shift towards greater self-sufficiency and reduced footprints at a national and city scale, with an expectation of reduced reliance on global supply chains. There is also a strong argument provided that we can expect a dramatic increase in digital usage impacting on all aspects of work and life.

Pathway:

1. Leverage mobility innovations towards net-zero urban mobility systems.
2. Implement regenerative urban designs.
3. Suburban regeneration for increased urban density and walkability.
4. Nature-based solutions from district/precinct to city scale.
5. Provide resilient infrastructure.
6. Transition to a circular economy model for urban infrastructure.
7. Embrace digital technology to transform urban governance.
8. Creating supportive decision contexts.

Key Urban Development Missions in India G20 Nation Should Follow :

1. Atal Mission for Rejuvenation and Urban Transformation (AMRUT)
2. Pradhan Mantri Awas Yojana (PMAY) – Housing for all (Urban)
3. Smart Cities Mission (SCM)
4. Swachh Bharat Mission (SBM)
5. Heritage City Development and Augmentation Yojana (HRIDAY)
6. Deen Dayal Antyodaya Yojana – National Urban Livelihood Mission (DAY-NULM)

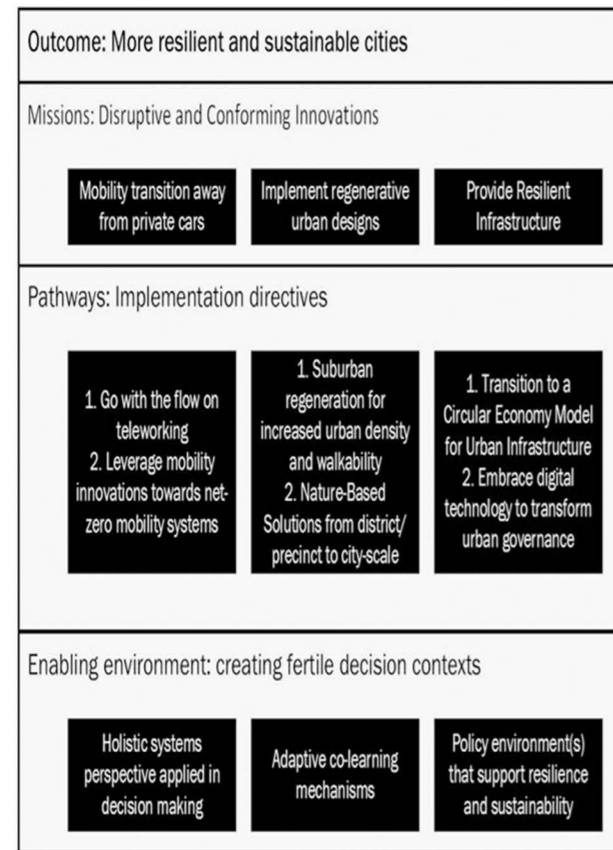


Fig 1: - Theory of Change towards a resilient city

2. Health Proposal:

The need to address this gap gains relevance in light of the COVID- 19 pandemic.

- Health security is often seen as 'state security' not 'Human security'
- It is a promising, yet underdeveloped, research base which demonstrates how specific improvements/investments in health systems and health system building blocks can enhance long-term health security. According to the World Health Organization (WHO), health security related to the activities required, both proactive and reactive, is needed to minimize vulnerability to acute public health events that endanger the collective health of populations living across geographical regions and international boundaries.

Implications:

1. Prioritizing health security over health systems,
2. Tendency to treat health security as exceptional,
3. Tendency to focus on acute health emergencies,
4. Focus on 'the south' and LIC/LMICs as the source of the global health security 'problem',
5. Under representation of NCDs,
6. Practical examples of strengthening the building blocks to achieve greater health security,
7. Adequate leadership and governance,
8. A well-functioning health information system,
9. A well performing health workforce,
10. Essential medicines, the example of Indonesia was again noted in the literature as representing innovative linkages between health security and health system development, where affordable access to essential medicines was a priority within its National Health Insurance System, providing lessons as the world's largest single-payer scheme.

3. Digital Education:

Digital education is a complex multidimensional topic that includes not only elementary, secondary, and tertiary education, but also the delivery of education both through and on digital technologies to all ages and competences within communities, from early learners to older adults. This chapter outlines the rationales, benefits and challenges associated with digital technologies in education. It also discusses how digital education might be measured in the context of rural towns. Formal education is hierarchically structured and typically chronologically graded from early childhood education and care, primary and secondary education, post-secondary non-tertiary education, through to tertiary education.

Technology entry level	Description
Objectives of learning for students and educators	Hard and soft digital skills, competences, and specific ICTs are increasingly part of the curriculum, education standards, and competency frameworks for primary, secondary and tertiary education, and are widely available through non-formal education providers.
Tools to support student learning	Digital technologies are key tools to support learning in the classroom, school, home or other locations e.g., libraries. These technologies include general ICT, multimedia materials, multi-tasking and interactive environments, gaming and simulations, and collaborative and Web 2.0 environments, amongst others.
Tools to support educators	Digital technologies can be integrated into teaching practices to enhance learning both inside and outside the classroom. In addition to those being used with students, educators are using technologies to communicate with parents and other stakeholders, prepare lessons, and for personal development, knowledge sharing, networking and collaboration, amongst others.
Tools to support the management of educational institutions or systems	Beyond the specific learning experience, whether in the classroom or online, digital technologies are being used to manage educational institutions and systems. The use of digital technologies is widespread for operational planning and management, data management and decision making, marketing and stakeholder communication.

*Digital technology entry points in to education systems.

Generally, access to digital technologies in education focuses on mainstream technologies. In addition to learning about these technologies, with the exception of Nano technologies and gene editing, education applications for frontier technologies abound.

Increased use of digital technologies is a cornerstone of national and international education policy. A wide range of rationales and potential benefits emanating from digital technologies are cited in policy and scholarly works, largely reflecting those presented.

Despite the general enthusiasm regarding the potential benefits of digital technologies in education, there are significant challenges to digital adoption and usage in education. Access is a multi-layered challenge which includes both access to digital education providers and access to digital technologies. Secondly, while there has certainly been an increase in access to digital technologies in formal education, neither access nor adequacy is uniform internationally. Even if learners or educators can access digital technologies at their institution, they may not have such access or an internet connection at home, particularly if they are socio-economically disadvantaged or from rural areas.

Similarly, Eurostat's Digital Economy and Society statistics suggest that 10% of the EU-27's population in 2019 had never used the internet. Skill levels are a significant factor in the use of digital technologies for learning, not only for adults but also for younger students. While digital technologies present numerous benefits, not least the flexibility of time and location-agnostic learning, it potentially excludes parts of the population, young and old, with limited or no access to technologies or with low or non-existent ICT skills. A number of studies have found that successful adoption of digital technologies in education requires strong leadership, an emphasis on the connection between pedagogical aims and digital technologies, school-wide adoption of the digital technologies, a focus on the process, and collaboration with external partners. Finally, and most importantly from an education perspective, evidence of a positive relationship between access to and use of digital technologies in education and learning outcomes remain inconclusive or weak at best. For example, while a greater 7 DIGITAL EDUCATION 142 proportion of those employed in the EU ICT sector have tertiary qualifications, the percentage of women employed in the EU with an ICT education has declined from 20.2% in 2009 to 17.3% in 2019.

Technology	Description
Social	Digital technologies in education help to prepare citizens to participate and function more fully in a society permeated by digital technologies (Hawkrige, 1990; Kozma, 2008; Office of Educational Technology, 2017; Spiers, 2018; European Union, 2020).
Accessibility	Digital technologies can increase accessibility to education for those who may be disadvantaged and vulnerable in society thereby reducing inequalities in society (Hawkrige, 1990; Baugstaller, 2003; Bocconi & Ott, 2011; Scale, 2013; Khetarpal, 2014; Wagner, 2018).
Pedagogical	Digital technologies can support educational reform and enhance teaching and learning (Hawkrige, 1990; Kozma, 2008; Office of Educational Technology, 2017; Peterson et al., 2018; OECD, 2020; European Union, 2020).
Vocational	Digital technologies in education can prepare citizens to work in a society permeated by digital technologies (Hawkrige, 1990; Kozma, 2008).
Sustainability	Digital technologies in education can help promote environmental sustainability and the use of advanced technologies to address climate change (EU, 2020).
Quality of service	Digital technologies in education can reduce the costs of educational delivery and increase the range, quality and efficiency of educational institutions and the quality of educational management (Kozma, 2008; Wagner, 2018; Founitzi & Caridakis, 2019; OECD, 2020).
Catalytic	Digital technologies in education can act as a catalyst for other innovations (Hawkrige, 1990; Kozma, 2005).
Economic	Digital technologies in education can contribute to greater economic growth and employment, including meeting demand for labour (Kozma, 2008; Anderson, 2008; World Economic Forum, 2015).
Reactive	Digital technologies in education can ensure continuity in response to a crisis (Bergdahl & Nouri, 2020; Daniel, 2020; World Bank, 2020).
Opportunistic	Digital technologies in education can differentiate an educational institution from its peers and make it more attractive to stakeholders (Founitzi & Caridakis, 2019).

* Rationales for adopting digital technologies in education

International data on digital education is not collected consistently for each of the levels identified—access, digital skills, competence and use, and outcomes. Indeed, common challenges in measuring digital education include:

- (1) "Fuzzy Boundaries" between technologies, education levels, and domains, and gradations in access, usage, competences and skills.
- (2) Self-reporting of data.
- (3) Frequency of data collection and reporting.
- (4) Maintaining pace with technological change.

As is evident in this chapter, research focuses significantly on secondary level education without addressing the dearth of data on early childhood education, primary education, as well as other non-formal and informal education and training provisions. Where education is included in general digital economy and society frameworks, it typically focuses on internet access and computer availability in schools. Despite the important role that education plays in both society and economies, many of these general frameworks do not include education at all—as is the case, for example, with the EU Digital Economy & Society Index.

Themes	Description	Selected sources
Access	Availability and access to digital technologies (incl. the internet) by learners and educators where educational activity occurs including at educational institutions and at home.	Eurostat, EU Survey of Schools: ICT in Education, ITU, Partnership on Measuring ICT for Development, PISA, TALIS, UNESCO Institute for Statistics (2009).
Enrolment	Enrolment in ICT-related courses or fields.	Eurostat, Partnership on Measuring ICT for Development, UNESCO Institute for Statistics.
Employment	Employment in the ICT sector.	EU Survey of Schools: ICT in Education, Eurostat, ILO Labour Force Survey.
Educator professional development	Provision and need for training on digital technologies in general and for teaching.	PIAAC, TALIS, UNESCO Institute for Statistics.
Equity	Access to and use of ICT for education purposes and relative proportion of female graduates in ICT-related fields.	UNESCO Institute for Statistics.
Digital competence, self-efficacy and skills of learners	Learner competence, self-efficacy and skills using different technologies and performing related tasks.	Eurostat, EU Survey of Schools: ICT in Education, PIAAC, PISA, TALIS.
Digital competence, self-efficacy and skills of educators	Educator competence, self-efficacy and skills using different digital technologies and performing related tasks for and in teaching.	EU Survey of Schools: ICT in Education, PISA, UNESCO Institute for Statistics.
Institutional guidelines and practices for the use of digital technologies	Documented guidelines and programmes on appropriate behaviour and use of digital technologies in general, for pedagogical purposes or in specific subjects.	EU Survey of Schools: ICT in Education, PISA, UNESCO Institute for Statistics.
Institutional capacity to enhance teaching and learning using digital devices	Adequate digital infrastructure, technical and pedagogical skills, support staff, time, and incentives to enhance teaching and learning.	PISA, TALIS, UNESCO Institute for Statistics.
Parents	Parental attitudes and support for digital technologies in education.	EU Survey of Schools: ICT in Education.
Use	Incidence, intensity and patterns of digital technology use by learners and educators for educational activities.	EU Survey of Schools: ICT in Education, Partnership on Measuring ICT for Development, PIAAC, PISA, TALIS.

*Common themes and selected data sources for digital technologies in education

4. Digital Town Initiatives Proposal:

At the same time, without the right incentives and policy interventions, rural areas could miss out the benefits of the ongoing technological revolution and would further widen inequalities." This chapter continues the discussion of enabling conditions for digital towns with a specific focus on the governance of digital town initiatives. The promise of digital town initiatives are multifaceted, including improved economic growth, population growth, better quality of life and, in the context of local governance, potential increased engagement in digital town initiatives and more open town governance .

However, not standing with the multiplicity of initiatives that might be characterized as elements of "digital town plans", and the spectrum of activity from local community initiatives, to town-driven, to "stakeholder/town", to more state and national government initiatives, there is relative scarcity of work which evaluates program outcomes in systematic way.

This failure to systematically evaluate programs and policies characterize many aspects of local and national policy. The experience of existing digital town initiatives suggest that digital towns require a broad concept of community governance that involves multi-agency works and self-organizing networks that cut across organizational and stakeholder boundaries while digital technologies can lead to better town governance. This is a distinction between the content of governance. For example, in this context, outcomes such as increased digitalization, and the process of governance, would increase civic engagement of citizens and stakeholders in the development of digital town plans. Initiative Digital technologies can also aid in increasing stakeholders' involvement in digital initiatives, and improved digital public services are just one outcome that is an indicator of the Digital Town.

Delivery on complex and multifaceted policy objectives such as town digitalization can be considered from the perspective of town governance as an organizational or managerial challenge of how to organize and coordinate across a diverse range of stakeholders, including town governance structures. Furthermore, in these more complex and process-orientated forms of governance, the focus is on inducing actors to engage in multi-actor actions, without one person or organizations in control.

The changes involved in moving towards a digital town may reflect a process of incremental changes in town governance, or in some instances it could involve more fundamental and transformative changes to governance structure. Not standing with the case for new forms of governance, there are strong arguments that in many multi-level systems of governance, at least the key decisions remain within centralized structures or alternatively the multi-levels separate, losing the elements of integration across actors.

- Community resilience emerges from four primary sets of adaptive capacities: Economic Development: The degree of resource volume and diversity, and resource equity and social inclusion within a community.
- Social Capital: The strength of network structures and linkages, social support, and community bonds, roots, and commitments within a community.
- Information and Communication: The systems and infrastructure used to inform the Public, and the presence of communal narratives that give the experience shared meaning and purpose.
- Community Competence: The ability of the community to participate in collective action and decision-making with collective efficacy and empowerment.

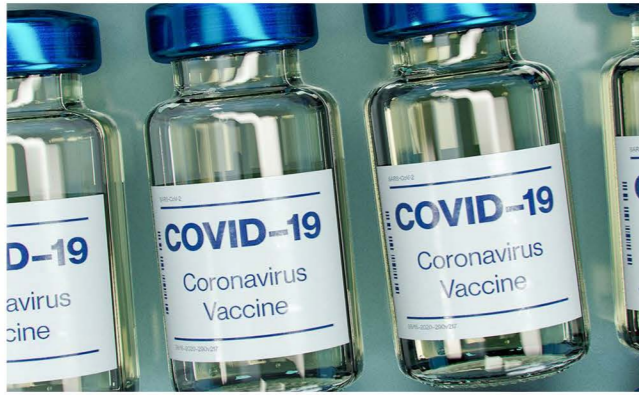
Horizontal integration refers to integration across different elements of policy making, and across policy and other stakeholders, typically those regarded at the same level of governance but with different responsibilities and objectives. In this respect, online town portals and platforms have been cited as key components in digital town projects. The governance of digital town initiatives is not only dependent on incremental changes within existing governance structures, but also requires engagements with a broader range of stakeholders, such as the external policy and government bodies as well as local stakeholders, which result in new forms of governance of projects and initiatives. This lack of measurement frameworks may be explained by a combination of the nascence of both the digital-town literature and the non-disaster community resilience literature, along with the relative complexity in translating digital town governance including vertical and horizontal integration and the adaptive capacities proposed.

Dimension	Definition	Characteristics
Horizontal integration	<ul style="list-style-type: none"> • Inter-relations among members of local communities in terms of social ties, collective action, and responsibility; neighbourhood ownership and sense of place; resource mobilisation; and awareness of disaster vulnerabilities and community assets. • Relations between local citizens and organisations, including emergency services, schools, churches, non-governmental and nonprofit organisations, associations, boards of business, Chambers of Commerce, and community groups. 	<ul style="list-style-type: none"> • Institutional mandates incl. Positions accessible to citizens, formal outreach plan, publicised meetings, and regular progress reports. • Representation and scope incl. Local participation in committee formation and membership criteria. • Role of technical expertise in encouraging participation incl. Facilitation of public engagement and reflection of public opinion. • Contribution of the final output (plan) to participation incl. commitment to public engagement and local capacity building. • Alignment of professional expertise and local needs.
Vertical integration	<ul style="list-style-type: none"> • Connection and access to political, social, and economic institutions and agencies, which may facilitate the flow of resources and adjusting policies in response to disasters and in anticipation of possible future risks. 	<ul style="list-style-type: none"> • State (Regional) leadership. • Encouraging stronger vertical ties by Program Design. • Facilitating upward flow of information incl. Independent organization and mandated/required upward flow. • Engendering active citizen influence incl. local participation in risk identification, public input prior to final projects, and project evaluation.

*Definitions and selected characteristics of horizontal and vertical integration

Dimension	Indicator title
Organisation	<ul style="list-style-type: none"> • Cross-departmental integration. • Establishment of leadership and resources within the administration. • Monitoring and evaluation of compliance with smart city requirements. • Availability of government data.
Community involvement	<ul style="list-style-type: none"> • Citizen participation in projects. • Open public participation. • Voter participation in municipal elections.
Multi-level governance	<ul style="list-style-type: none"> • Strategies and Policies: Smart city policy. • Budget: Expenditures by the municipality for a transition towards a smart city. • The extent to which the city cooperates with other authorities from different levels.

*City Keys governance dimensions and indicator.



SWF's Challenges in Infrastructure Financing, Task of G20 in Preventing Future Global Crisis

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ABSTRACT ✨

This policy brief proposes to establish a Group of Twenty (G20) crisis management framework to ensure Sovereign Wealth Funds (SWF)'s good governance, especially in maintaining transparency while promoting sustainable infrastructure investment and financing. It is a continuation of the 2020 T20 Policy Brief that proposed the creation of a platform to increase cooperations among SWFs. However, while acknowledging the optimism, importance of the platform for cooperation, and SWFs increased contributions to infrastructure financing (particularly during the Covid-19 pandemic), this brief advises that there are persisting problems regarding transparency and political intervention, which might trigger a more profound economic crisis. It highlights the crucial role of the G20 as a crisis responder and as a meeting point for the states with the highest stakes in SWFs. It also stresses the need to balance accountability and flexibility. The proposed framework's mandatory declaration mechanism should guide the multilateral monitoring of SWFs, ensuring the principles of good and sustainable governance, while assuring the flexibility of the G20 as a forum of commitment. By establishing a crisis management framework under the G20, we will ensure the good governance of SWFs' practices. The center of this framework would be the inter-SWF monitoring and data-sharing body under the G20, which facilitates both the idea of safe and low-risk investment and thriving development under the principles of consensual and self-determined transparency, as well as sustainability.

CHALLENGE ✨

The Covid-19 pandemic has accelerated the gradual changes to the focus of SWFs worldwide. The main goal of the SWFs is to act as a stabilizing fund in a crisis through investing in financial markets in other countries. However, the SWF Institute's data (2022) showed that infrastructure investment and financing from SWFs worldwide had risen considerably in 2021 compared to the previous years. Interestingly, as the 2021 report from the International Forum of SWF (IFSWF) has shown, most of the current infrastructure financing is directed domestically to help the local economy during the global pandemic, further proving SWFs' vital role in economic stabilization and growth.

Despite the growing role of SWFs, there is a persisting fear that SWFs also present notable challenges, such as the issues of transparency, proneness to corruption and government intervention, as well as the resistance to a more sustainable, greener, and inclusive mode of investment. According to Zhang (2016), transparency is related to information disclosure to stakeholders. SWFs' transparency is associated to relations between SWFs with sponsors, their internal organizations, the recipient country, and the general public. The inability to deliver information to these stakeholders is considered a detrimental factor to the SWFs and the sponsor country. Transparency also ensures SWFs' purposefulness, fund targeting, and prevention fund looting. This is a concern to the Middle East-based SWFs, as there are questions about their funds' management (Zhang, 2016; Habib et al., 2014; Strohecker, 2014).

On the other hand, corruption and government intervention are also a problem for SWFs as this practice could result in taxpayer money mismanagement or even money laundering. Corruption is uneasiness for SWF that the government directly controls. Government control could also result in an intervention that could hinder SWF management. The Malaysian 1MDB major corruption scandal is an essential reminder of political and economic risks, coupled with the smaller-scale corruption and scandal in the Korea Investment Corporation and Norway's Government Pension Fund Global. Additionally, prominent SWFs tend to make little progress towards greener infrastructure financing, undermining the global effort for sustainable development. In SWFs' dynamics, investment is one of the critical businesses that SWF pursues. Billions of dollars in investment could affect inclusivity and greener initiatives. Prominent SWFs should focus more on these issues so that their multiplier effect align with the global agenda. The problem of transparency, corruption, and resistance to more sustainable and inclusive initiatives highlights the need for a mechanism and a strategy to strengthen the potential role of SWFs to provide less risky, more transparent, and more sustainable infrastructure financing.

The above-mentioned cases have demonstrated numerous problems in the unsupervised independence and total liberalization of SWFs issues that neither the states nor the pre-existing global forum among SWFs could solve. Therefore, a governance framework for SWFs is urgently needed. However, the existing global institutional frameworks, such as the World Bank and International Monetary Fund (IMF), are deemed too bureaucratic to be a medium for one. The G20 held a strategic position as the interregional forum of developed and developing countries focused on prevailing economic issues. This role is further supported by the fact that most G20 members are a part of the IFSWF, and nine out of the most significant 20 SWFs in the world, by asset value, belong to G20 members.

PROPOSAL ✨

The G20 should play a vital role in preventing an SWF-induced crisis. Although infrastructure investment was included as a G20 cooperation agenda in 2010, followed by the initiative to utilize SWFs to enhance the cooperation in 2013, there are still gaps provided by the current framework. The current challenge facing the G20 is that it was founded, and has acted, as a crisis responder and therefore is in dire need of establishing a new system to prevent another global economic meltdown. The earlier examples demonstrated a looming financial crisis domino effect as the SWFs increasingly take more prominent roles. The G20, in cooperation with the Organization of Economic Co-operation and Development (OECD), has agreed on seven principles of long-term investment financing by institutional investors. However, implementing these principles is still highly questioned. The lack of a legally-binding financial regime and compliance mechanism has resulted in the potential of SWF mismanagement at the national level and could result in a severe chain of economic impact.

Therefore, this brief proposes to establish a crisis management framework under the G20 to ensure the good governance of SWFs' practices. This framework would provide the needed mechanisms, including establishing a platform or body, to ensure the good governance of SWFs while maintaining the investing flexibility that underlies their construction in the first place. The primary function of this body is to enforce the framework, with a particular focus on maintaining transparency among stakeholders. The framework's primary function is mandatory disclosure mechanisms, highlighting the G20's role as a forum of commitment between states with SWFs. The currently existing governance towards SWFs has been informal and is reflected in principles that govern its standard of good practices—the Sovereign Wealth Funds: Generally Accepted Principles and Practices (GAPP), also known as the Santiago Principles. The principles were designed in 2008 by the IMF and the International Working Group of Sovereign Wealth Funds (IWG-SWF) and were set up to address the concern of possible crises and problems arising with SWFs practices. The principles were 24-point non-legally binding practices taken from various pre-existing SWF practices across the world, set out to be generalized, and followed by other SWFs. The principles continue to be promoted by the IFSWF and are applied by its 30-member SWFs.

The Principle of Transparency

The universally agreed benefit of the Santiago Principles is that it promotes a good, transparent, and visible scheme for SWFs both in terms of their income and outcome finance. It was also designed so as not to restrict the flexibility of SWFs in gaining investment and investing them in projects that other institutions might not finance. Thus, the principles need to be urgently adopted by SWFs that have not. However, the recommendations of this brief would focus on the fact that there are still problems arising from the existing SWF practices, even among those who claiming to have applied the principles. The cases discussed in the previous sections showed that the principles have constituted a set of general principles, a more rigid mechanism. Although the Santiago Principles document (IWG-SWF, 2008) has elaborated standards and operational definitions for each principle, it left many looming interpretation gaps and a lack of monitoring.

The main problem that this brief' recommendation addresses is the definition of the concept of transparency the existing governance seems to follow. Another example of the operational definition for this primary concept of good SWF practice is on the Linaburg-Maduell Transparency Index (SWFI, n.d.). The index, developed by Carl Linaburg and Michael Maduell of the SWF Institute, has been used to determine the transparency rank of SWFs worldwide. However, the currently existing transparency regime in SWF governance has always revolved around the idea of consensual, self-determined, unchecked transparency. Existing discourses on SWF regulation have somewhat been very anxious on the ideas of regulation, monitoring, and audit.

Therefore, G20 becomes a strategic stakeholder. The organization has been a forum of commitment between 20 of the world's largest economic power, many of which are the owners of the world's most prominent SWFs. The baseline of our recommendation is that, as one of the G20's main agendas is to ensure financial stability and economic growth balance, it should promote the discussion on the SWF agenda and application of the existing governance to its members. The aforementioned cases have shown that mismanagement of SWF finance, especially in large numbers, might have a domino effect on the global economy. This discussion is especially vital when developmental states invest more and SWFs manage more considerable finances.

However, our primary recommendation is to establish an inter-SWFs monitoring and data-sharing body under the G20, which facilitates both the idea of safe and low-risk investment and thriving development. This recommendation emerges from the fact that while the IFSWF has become a platform for disseminating transparency of SWFs to the larger global community, it has not played any part in preventing or managing the crises happening in SWFs from different parts of the world. The main problem that this brief observed is that self-assessments of SWFs were left unchecked to the general public with no particular knowledge of financial audits. The newly established body would still follow the principle of consent and self-assessment of SWFs. It follows principle number 23 of the Santiago Principles on reporting and measuring SWF assets and investment performances. However, this establishment would also emphasize the 12th principle of the Santiago Principles on the independent auditor. By engaging with an independent auditory body, it might conduct annual or regular audit processes simultaneously, thus providing comprehensive and partial information for regulators and investors, and also providing clarity and safety. The mandate of this body would also extend to process the audit reports into an accreditation or ranking, which would encourage the SWFs to ensure good governance and investment. It is under the 24th principle of the Santiago Principles regarding the regular review. The G20 becomes the strategic forum to host this body as it is in line with its nature as an informal inter-governmental forum and its function on economic development focus. The body is a measure to counter the myth that regulation and monitoring would hinder investment and infrastructure development. Instead it would be a testament to how transparency, review, and visibility would provide safety to investment and prevention of inadequate practices at the operational level such as corruption, bribery, and other financial mismanagements

The Principle of Sustainability

Moreover, we propose adopting sustainable SWFs' principles and good practices for the crisis management framework. There are three (3) basic sustainability principles that would form the basis of the "G20 Principles of Sustainable SWFs," named after the Santiago Principles of transparency. The principles are derived from SWFs' experiences and best practices from several countries, from Norway to Russia, to construct a standard norm at the global level.

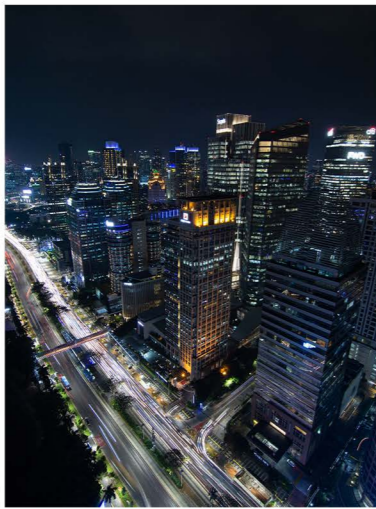
The first is the importance of social welfare as the basis for managing SWFs. In this case, Norway is a good example. Norway SWF (Government Pension Fund Global/GPFG) is one of the few models of SWF governance that has inspired many countries. Two aspects have, by far, played a vital role in the success of GPFG: a solid commitment to sustainability and a wise investment strategy. The Norwegian government's commitment consistently allocates the oil surplus to the pension funds, which amounts to 100 percent of Norway's total oil revenues (Brother, 2015). The allocation of these funds has also been specifically mandated to be invested abroad, which is fundamentally different from Norway's domestic economy. The hope is that the source of GPFG funds will continue even though Norway's domestic economy is experiencing instability. A large amount of allocation does not necessarily lead to the flexibility of withdrawing funds yearly. The Norwegian government is aware of the potential of Dutch Disease – a condition where one sector of the economy proliferates and other sectors decline. Therefore, a rule was made to ensure that the total funds taken from the GPFG for the Norwegian economy are not more than 4 percent yearly. A prudent investment strategy follows the government's ongoing commitment to social welfare. It can be seen from the allocation proportion consisting of 72 percent equity, 25 percent fixed income, and 2.5 percent property. This strategy allows GPFG to benefit from the fixed-income sector every year. Government securities investments generally bear lower risks and they are more stable than equity investments. The lesson to be drawn is that sustainability and discipline in using assets must be the basic principles in SWFs management. The SWFs must have a wise investment strategy to fulfill the sustainability mandate.

Secondly, the wise welfare-based investment strategy must be followed by a creative, efficient, and prudent funds allocation and management strategy. We can learn from Singapore in this principle. Towards the end of the 1970s, Singapore enjoyed a balance of payments surplus, increasing its wealth. However, the turbulent situation and increasing uncertainty in financial markets prompted the Singaporean government to think far ahead. To ensure that the surplus does not evaporate, the Government of Singapore established the Government of Singapore Investment Corporation Private Limited (GIC) in 1981 (Huat, 2016). With Temasek Holdings, GIC is an SWF that Singapore formed following the foreign exchange surplus and balance of payments surplus it enjoyed in the early and late 1970s. In its operations, Temasek's investment is more strategic and active, result-oriented, and it shows great interest in businesses with rapid growth prospects. Temasek's investment targets are divided into two groups. First, domestic strategic businesses such as water, electricity, gas, airports, ports, broadcasting, health, education, and real estate. Second, businesses with high-growth opportunities at the regional or international level (Huat, 2016). Until the 1990s, the main focus of Temasek's investment was the development of GLC, but into the 2000s, its investment became more widespread and went international (Ng, 2010). Previously, the CEO of Temasek was a government official. Entering the 2000s, Temasek was open to professional leadership. The annual report began to be released, and its capitalization continued to increase yearly. Temasek's portfolio value was around USD 231 billion in 2020 (Temasek, 2020).

Unlike Temasek, GIC was formed as a private reserve investment corporation whose function is to invest Singapore's surplus foreign exchange reserves. The purpose of the investment made by GIC is to maintain and increase the value/purchasing power of Singapore's foreign exchange reserves (Castelli and Scacciavillani, 2012). Thus, in contrast to Temasek's strategic and active investment strategy, GIC implements a passive, long-term, and yield-seeking investment strategy (Seng 2014). In making investments, GIC implements two strategies: (1) a 'beta' strategy that is passive and relies on buy-and-hold, and (2) an active 'alpha' strategy to earn more returns. These two strategies represent GIC's adjustment to the risks and opportunities generated by existing market conditions. The willingness to adjust to this risk profile shows that GIC tends to be independent and oriented to commercial interests in its investment activities.

Thirdly, there must be an effort to ensure a strict rule about conflict of interest. Based on Russia's and Malaysia's experiences, the government's direct involvement in managing SWFs could create significant problems. The Russia Direct Investment Fund (RDIF) is not under the Ministry of Finance like the Stabilization Fund, Reserve Fund, or National Wealth Fund. However, the RDIF is directly responsible to Russia's President and Prime Minister. Based on a regulation issued by the Russian Government on 2 June 2016 (President of Russia, 2016), the Chief Executive Officer (CEO) and Supervisory Board of the RDIF are appointed by the President on the recommendation of the Prime Minister. In fact, in the current RDIF Supervisory Board, there are figures close to President Vladimir Putin, such as Sergei Ivanov (former Minister of Defense and Presidential Chief of Staff) and ministers ranging from the Minister of Economic Development to the Minister of Finance. The only non-government figure on the Supervisory Board is the French economist and former Managing Director of the International Monetary Fund (IMF), Dominique Strauss-Kahn. Strong government control is the main feature visible in the management of RDIF. Russian President Putin was the primary regulator of oil and gas proceeds' distribution in the previous format, who also determined which sectors to invest in (Gaddy & Ickes, 2013). It then allowed non-transparent practices and misuse of funds for political purposes.

As the case of Malaysia 1MDB has shown, the problem lies in the combination of a large amount of debts and poor governance. The long-listed mistakes of terrible governance include (1) the dominant power of the executives; (2) lack of transparency; (3) corruption; (4) bribery; (5) money laundering; (6) false statements; and (7) the consequent manipulation of bond prices (Jones 2020, 60-2). The first and second points provide almost unlimited space for former Prime Minister Najib Razak and other parties involved in the 1MDB scandal to carry out the bad practices, while the source of funds from debt affects the level of financial losses that Malaysia must bear as a result of this scandal.



Culture-Sensitive Public Procurement Benchmarking

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ABSTRACT SUMMARY ✨

In this brief we will address the measure of managing public procurement taking into consideration cultural, corporate and organizational specificities, with a sustainable development strategy in mind. When such tools are used in conjunction, the efficiency of production applications is increased. Further research should focus on the investigation of foreign markets for industrial and state businesses' public procurement, including private law state-owned companies, as well as on developing a mechanism to evaluate public procurement that takes economic, social, and environmental factors into account. Finally, we need to be aware that integrating cultural factors when dealing with public procurement is fundamental when it comes to leadership issues. Underpinning leadership is an ability to comprehend people, their values, and characteristics, and how these factors may correct and adapt public procurement methodology.

CHALLENGES ✨

How does organizational and national culture affect public procurement proceedings? According to experts of public procurement, such a topic is not addressed or looked at clearly enough to impart the necessary relevance. Effective project management and procurement of all people-related parts of a project, and programs of projects, is a crucial ability that cannot be overlooked. The brief will be significant for benchmarking the increasing number of orders at PPP industries, the implementation of import substitution plans, the strengthening of enterprise strategies for sustainable development, and the lack of scientific studies in the field of strategic purchasing activity planning.

The primary challenges associated with public procurement are that issues of modern strategic procurement planning have applied no interest to cultural local sensitivities, and that no terminology for sustainable purchasing activity has been developed. Furthermore, tools for managing procurement factors must be developed. Once such challenges are overcome, it will be possible to conduct procurement analyses which consider the issues related to culture, while at the same time considering the contemporary objectives of sustainable growth and the methods chosen to increase its stability and efficiency.

Understanding what makes people 'tick' and, indeed, how the entire systems of people, processes, and technology interactions require an understanding of individuals' and organizations' values and the most fundamental formative beliefs about what is just and acceptable.

Public procurement without barriers is a fundamental objective for fair and sustainable development. By focusing on cultural specificities, this brief provides useful solutions for analyzing and proposing improvements to public procurement systems in all countries. By working on this topic, the T20 can advance its benchmarking and cooperation tools for ethical procurement within a country, but also internationally. This will improve relations by limiting communication friction and resolving pre-existing conflicts in an objective manner.

PROPOSAL ✨

The purpose of this study is to firstly improve the quality of public procurement benchmarking procedures by integrating cultural sensitivities. Moreover, our study will highlight the critical nature of benchmarking to overcome apparent deficiencies in these processes.

Culture is known to have a major impact in the functioning of administration, regardless of other issues (racial, sociology, religion, etc). (Goldbach, Dragomir, Barbat 2014; Ritz, Brewer 2013). Further, it has been shown that cultural environments can affect government transparency and sustainability considerably. (Ruiz-Lozano, Navarro- Galera, Tirado-Valencia, De Los Rios-Berjillos 2019). We will also be highlighting the difficulty faced by public-sector employees in distancing themselves from the political pressures of their elected leaders. In public procurement (PP), centralization appears to be a definite tendency (Dimitri, Dini, Piga 2006).

Governments around the world are encouraging public-sector organizations to collaborate when proceeding to public procurements, allowing them to realize economies of scale and scope. The United Kingdom, the Netherlands, the United States and Australia serve as examples for this. (Schotanus Et Alii 2011). When purchasing is decentralized, all government units and agencies have the freedom to order products and services that meet their specific requirements. However, many of these requirements are comparable across agencies (for example, office supplies and cleaning services), and the government as a whole loses out if such purchases are not managed from the center (Karjalainen and Van Raaij 2011). As a result, several governments are adopting a more centralized procurement paradigm. The two main sources of savings from these agreements, are price reductions from suppliers and administrative cost savings from decreasing recurrent tenders. (Celec, Nosari, Voich 2003). Additional benefits of centralization might include improved purchasing processes as well as improved quality of purchased products and services (Schotanus Et Alii 2011).

However, it has been demonstrated that generating and maintaining such benefits is extremely challenging (Cox, Chick-sand, Ireland 2005). As a whole, centralization fails to avoid inefficiencies, just like decentralized models. Non-compliant procurement behavior is preventing public and private sector companies from achieving the procurement efficiency goals (Lonsdale and Watson 2005). Non-compliant procurement behavior means corruption or misuse of funds, and also maverick buying and non- competitive PP. It is not a crime, but non-competitive PPs are unreasonable at least. Some parties may have proposed 'social construct' or 'individual dismissive behaviors' as the causes of such issues, yet they are obviously multiple.

Among all the reasons that may exist, one particular issue has been put aside in the past. That is, the issue of culture. When we talk about culture, we are mainly talking about the habits of specific populations, regardless of the reason for these habits. A culture is defined, among other things, by its functional loop between its referential and its attractiveness for its own population. In political and psychological terms, it is known as groupthink and social cohesion. Social cohesion is the set of circumstances in which group members' attitudes and behaviors are influenced by and molded by their surroundings (Festinger 1950; Festinger,

Schachter and Back 1950). Heuser (2005) defines social cohesion as socioeconomic phenomena in which collective principles and ethics have a significant impact on behavior. In his opinion, the fragile matrix through which a society's worth is measured is made up of social, moral, and economic ideals. The social cognitive theory (Bandura 1991) was put forward by Bandura, Barbaranelli, Caprara, and Pastorelli (1996) to show that people form moral standards based on the influence of others who may be morally or economically motivated. At least two contradictory motivations are driving the current interest in social cohesion. According to Heuser (2005), social cohesiveness helps organizations grasp the potentially advantageous aspects of collective solidarity, the force that comes from moral conviction, and how these dynamics can be socially constructed to demolish positive dynamics in social bonds and structures.

Groupthink is a phenomenon in which a group prematurely and often incorrectly comes to an agreement on a critical topic or strategy as a result of in-group pressures, despite evidence pointing to the presence of ill-debated alternate courses of action. According to Janis (1983), Groupthink causes a decline in mental efficiency, reality checking, and moral judgments. During procurement processes such as user needs' assessment, bid document preparation, bid solicitation and review, and contract awarding, procurement professionals succumb to peer manipulation at the expense of reasonable argument and principled stances. Groups frequently believe that what they are doing is best for everyone (Beer, Einstadt Spector 1990).

These two basic elements lead an individual, within a community, to think that things could not work otherwise. This loop of functioning engenders attitudes and habits (regardless these attitudes being 'positive' or 'negative'), which have habitual and partly predictable consequences. In public procurement, these basic social phenomena have the effect of diverting large sums of money from public funds to inefficient uses.

Case Study: Supporting Bicycle as Transportation Mode for Healthier Yogyakarta City, Indonesia

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ABSTRACT ✨

Motorized vehicles are the most significant contributors to pollution in the city. They contribute 60% of carbon emissions in Yogyakarta city (Pustral, 2015). Therefore, alternative modes of transportation are needed for people's daily mobility to reduce pollution. Bicycles may be an alternative to reduce the use of fossil fuels consumed by motorized vehicles. An online survey conducted by the Centre for Transportation and Logistic Studies (Pustral) UGM, together with the Purpose Climate Lab (PCL), shows that people's interest in cycling increases along with the availability of supportive infrastructure and facilities. However, nowadays, the number of those infrastructures such as bicycle markings and signs is still inadequate. As a result, many people are still reluctant and even fearful to cycle in Yogyakarta City, particularly for daily activities such as going to school and work. This policy paper emphasizes on several policy recommendations, including government intervention in infrastructure/facilities supply and level of cycling demand. Regarding the supply, the government needs to provide facilities and support to improve cyclists' safety, security, and comfort. On the demand side, it is necessary to change people's behavior using alternative modes such as public transportation and bicycles. This behavior change can be encouraged through education on the importance of using environmentally friendly modes of transport and promoting available bicycle facilities and services. In addition, those efforts must synergize with attempts to reduce the use of motorized vehicles and better regulations on road space.

CHALLENGE ✨

Poor air quality is an essential issue for the global community, including the people of Yogyakarta City. In 2019, Yogyakarta only had 40 days of good air out of 122 according to data collection (Ministry of Environment and Forestry, 2019). Meanwhile, in 2020 and 2021, there was a significant decrease in only six days of bad air (Ministry of Environment and Forestry, 2021 and 2021), likely due to mobility restrictions during the pandemic. However, air quality may turn worse with the easing of mobility if conditions such as Covid-19 cases begin to resurface. More than 80% of the local residents believe air pollution is an important issue (Kompas, 2021). Based on the results of emission measurement in Yogyakarta, mobile sources or motorized vehicles contribute more than 60% of the total measured emissions (Pustral, 2015). Kompas survey (2021) supports this fact showing that 88.6% of residents of Yogyakarta City and commuters use private vehicles, especially motorcycles. Therefore, to reduce air pollution, a revolution in urban mobility is needed. The government needs to consider issuing a law on reducing private-vehicle use, increasing the availability and connectivity of public transport, and using low-carbon vehicles such as bicycles. Research has shown that cycling is the best way to achieve carbon-free cities in the shortest time, beating even electric cars which will need at least 15-20 years of transition to take effect (Brand, 2021; Brand et al., 2022). Bicycles are an ideal mode of urban travel. Studies have revealed that most daily movement within urban area is less than five (5) miles. More recent electric bikes and scooters have also proven to have provided benefits of reduced carbon and increased physical activity, as people shift from motorized vehicles to two-wheel carbon-free modes of transport (Castro et al., 2019; UTG, 2022). Cities around the world are transforming to increase the use of bicycles; Copenhagen and Amsterdam are among the most ideal bike-friendly cities, followed by a developing country such as Bogota in Colombia. Other cities like London to Jakarta are also trying to transform. (Johandson, 2020; Larsen, 2016; Nello-Deakin & Nikolaeva, 2020; The Jakarta Post, 2021). Thus, Yogyakarta's move toward becoming a bike-friendly city will serve as another best practice for cities, especially in Southeast Asia, where there is a low number of bike users (Bakker et al., 2018).

There needs to be a stronger support for bicycle infrastructure; moreover, the central government has issued various regulations that guarantee and prioritize the safety of cyclists and pedestrians, such as Government Regulation No. 37/2017 concerning Road Traffic and Transportation Safety, Road Traffic and Transportation Law, and Minister of Transportation Regulation No.59/2020.

PROPOSAL ✨

Referring to the results of previous research, supported by the latest surveys and polls with Yogyakarta City policymakers in 2021, the availability of facilities and infrastructure that provide safety, security, and comfort for cyclists can boost cycling preferences in the community. Meanwhile, in Yogyakarta City, the availability of infrastructure and systems that support cyclists is still not maximized. Although the Yogyakarta City Government has initiated the manufacture of bicycle markings on several roads, the number is inadequate. Based on the survey results, only 64.75% of roads have bicycle lane markings from the overall bicycle lane creation plan, and only 21.5% of roads have road markings on tourist bicycle routes designed by the government. Apart from the lack of bicycle markings, there is no other supporting infrastructure, especially bicycle signs that guide cyclists and increase the vigilance of other road users toward cyclists. Some of the problems in existing bicycle lanes include faded road markings, side disturbances, the absence of bicycle traffic signs, and/or functioned as motorcycle parking place.

Current 'inefficiencies' countering solutions that focus on human capital are based on the 'proposal' of codes of ethics, based on Somers (2001) and the studies that followed, which found that the formal dissemination process exposing employees to a code of ethics generally ensures the highest standards of behavior and restrains unethical conduct. The 2009 OECD guidelines, for example, focus on the issue of transparency and good governance. However, organizational experiments have shown that work-place group effects frequently undercut official standards of conduct. Ajzen (1998) writes 'A person's desire to do [or not perform] a behavior is the immediate determinant of that action', 'and people are expected to act in accordance with their intentions, barring unanticipated events'.

That being said, these solutions are obviously completely ineffective in countries where the two mechanisms mentioned above make these principles useless or simply ignored. To solve these problems at least partially, we propose to integrate into the public procurement charters or guidelines modifications to adapt to local specificities, and to counter abuses that could occur due to an inadequate public procurement.

To clarify this proposed solution, yet to be detailed in a further research, we will make a case based on the very well-known concept of 'social trust' (Murtin 2018) and innate 'secretiveness' of a culture:

- First, in a government structure where people are by-nature expansive (for instance some East Africa Swahili speaking countries, but also some Romance-speaking countries in America) and not inclined to keep secrets, giving them information about a public contract risks disclosing sensitive information to malicious or non-compliant actors. On the contrary, in a state structure of a country where secrecy is a fundamental element of the "high" culture (e.g. China, Japan, Switzerland or Italy), particular attention must be given not to the information of the parties, but to the publicity of the proceedings.

- Second, in cultural structures where social trust is very low, an additional effort of transparency must be made on the attribution modalities. On the contrary, in a country where social trust is high, a particular effort must be made on the functionality of the proposals, which too often happens to be totally separated from reality.

Broms, Dahlström and Fazekas (2019) have shown that in the case of small cities in Sweden, low political competition is associated with more restricted public procurement processes. Integrating cultural sensitivities can correct this lack of efficiency, in a very interesting way, by allowing shifting the burden from bureaucrats, to the stakeholders in general. Also very significantly, this will allow an increase of accountability: PP problems are by no means limited to developing countries (Hunja 2003) Even in jurisdictions with more established administrations, the concerns are underappreciated, making them vulnerable to systemic accountability failures –sometimes because the agents of accountability themselves have just a rudimentary understanding of the difficulties (Peachment 1992). Failures to understand when contractual connections exist, or when the transfer of information on the process constitutes breaches of confidentiality, have been documented in multiple cases (Peter and Esselman 1997 ; Rice 2007). Even when these flaws are disclosed, it is usually on an ad hoc and exceptional basis, despite the fact that the problems are sometimes persistent and endemic.

Finally, adopting last-generation tools such as blockchain or DLT could be a major solution. Ferreira and Amaral (2016) highlights several benefits of ICT adoption associated with purchasing practices, including: (i) a simple and efficient way of buying, allowing for lower transaction costs; (ii) a more efficient way of identifying and negotiating with suppliers; (iii) automation of workflows that can then be extended to the entire supply chain and to the entire organization, allowing for information sharing and integration; and (iv) a more efficient way of identifying and negotiating with suppliers (see also Schoenherr and Tummala 2009; UE Commission 2010). Ronchi (2010) concentrates on three types of benefits: (i) strategic benefits (connected to comparative efficiency); (ii) transactional benefits (related to transactional efficiency and effectiveness); and (iii) informational benefits (as well as decision support and timely communication). This dialogue is critical for developing the overall government transparency strategy for public procurement in order to improve accountability through

the use of information and communication technology (Lourenço 2013), and continues to do so to serve the public interest.

DLT (Distributed Ledger Technology) is a data-storage system that stores information about transactions, activities, or operations and is highly dependable due to the technology it employs. Its use has risen in recent years in a variety of industries, most notably in the financial sector. Together with a strong cultural focus, DLT can impact three aspects: transparency, impartiality, and control over the bidding processes. For instance, once the tender documents have been published, they cannot be changed. Any changes must be made through the filing of an addendum. Any effort to introduce alterations will be recognized as a red flag by the system. Second, and depending on the cultural context, bidders can either submit encrypted proposals that would be distributed only to stakeholders, or, in other contexts, to every party, in order to increase social trusts.

To recap, we believe that a public procurement that will take into consideration the problematics linked to any cultural habitus, regardless of moral consideration, will manage, in the long term, to improve the public procurement outcomes. Taking into consideration group think and the social cohesion, in particular, will allow procedures to get the best outcome possible. Integrating DLT technologies, particularly, will allow an evolution for the best.

Additionally, some roads often used by bicycles have no bicycle infrastructure. For example, on five tourist bicycle routes made by the Yogyakarta City government, only some part of the routes were equipped with bicycle route directions, and there are no crossing markings on the highway crossings. Furthermore, the condition of some parts of the road is rough, especially along the river. In addition to infrastructure on the street, supporting facilities such as bicycle parking racks are rarely seen. These facilities are only available at some points at the city center provided by the government.

The physical obstacle Yogyakarta City is facing is limited land. A realistic solution to this problem is to adapt the function of existing roads and lands by creating bicycle facilities that can be used together or alternately with other road users. Therefore, signs and dissemination of bicycle lanes must be improved so that road users, in general, have clarity on the function of bicycle lanes and their signs.

Policy interventions can be formed from both the supply and demand sides. For example, both types of interventions are expected to increase the use of bicycles for daily activities and reduce the use of motor vehicles. The concept of intervention can be observed in the Figure below.



Figure 1. The concept of government intervention to increase the use of bicycles

To implement recommendations; several other aspects are also considered in efforts to reduce the use of motorized vehicles, including:

1. Providing incentives to use environmentally friendly transportation. This can be in the form of rewards and tax incentives for businesses that support their workers to use public transportation/bicycles, tax relaxation incentives for the environmentally friendly transportation equipment industry, subsidies for public transportation costs, and making areas environmentally friendly with a ban on motor vehicles at certain times
 2. On the other hand, various disincentives, such as applying progressive taxes for motorcycles, must also be given. So far, Yogyakarta has only used a progressive tax for more than one car ownership. Even though the survey shows that 72.8% of households in Yogyakarta have at least two motorcycles, an increase in the cost of parking vehicles in urban areas can also be a disincentive.
 3. Improvement of the public transport network integrated with bicycle and pedestrian infrastructure development. Parking and sidewalk arrangements can improve the safety and comfort of cyclists and pedestrians, supporting the overall efforts to increase the use of environmentally friendly modes of transportation.
- In the short term, the Yogyakarta city government's intervention efforts can be focused on three things, namely:
1. The Local Ordinance is a Mayor's Regulation that requires shopping centers such as networked convenience stores and conventional stores nationwide to provide safe parking facilities or bicycle racks for customers.
 2. Regional Regulations in the form of Mayor's Regulations regulate the division of space and time for bicycle lanes in Yogyakarta City at certain hours when people cycle to and from work and school.
 3. Dissemination of the above policies so that the community supports and is willing to participate in the cycling movement.

The provision of safe parking facilities for cyclists has been stated in the regulations of the Minister of Transportation Number 59 of 2020 Article 18. Secure bicycle parking facilities should be in a location that is easy to access, safe and has no interference with pedestrians. In addition, it is also necessary to have shelves, poles, or backrests that allow users to lock their bikes. These parking facilities must be provided by transport nodes, office buildings, shopping malls, schools, and places of worship. Therefore, the above regulations require a Mayor's Regulation as the basis for technical implementation, given that the cost of the bicycle rack will be charged to the private sectors.

Meanwhile, the concept of sharing time and space emerged, considering that Yogyakarta City has no wide road body. The main road section in Yogyakarta City usually only has four, sometimes relatively narrow lanes. Additionally, the side of the street is often used as a parking lot for motor vehicles. This parking area sometimes also seizes the rights of cyclists to take on the bike lane area. However, harsh law enforcement can cause oppositions from the public and employers as most shops or stalls often depend on curbside parking areas. Therefore, a Mayor's Regulation is needed as the basis for the technical implementation of the space and time division concept that will regulate barrier-free bicycle lanes during school and office commuting hours. Outside those hours, bike lanes can be used by other road users, including for parking. Furthermore, effective public communication between the government and the community concerned about the cycling issue is also needed. In this case, the Yogyakarta City Government and community organizations can share resources to disseminate the above policy changes in order to make the wider community fully understand the good intentions and goals.



Land Acquisition and Infrastructure Development: Comprehensive Approach to Manage Residual Impacts of Infrastructure Projects in Developing Countries

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ABSTRACT ✨

Infrastructure projects in developing countries are crucial to improve the interconnectivity and equality of national economic development. However, infrastructure projects may lead to social impacts. For example, land acquisition may cause involuntary resettlement that may impact the livelihoods of Project-Affected People (PAP). The land is a critical resource for infrastructure development and the government has established regulations to stipulate land acquisition mechanisms and mitigate the social impacts. However, in practice, social impacts on PAP are usually insufficiently mitigated. Based on applicable regulation, the cost for land acquisition must be calculated with fair compensation, considering both physical and economic losses. It is common that residual impacts remain as some aspects are not fully counted such as: post-land acquisition life management and sustainability of life for squatters without legal ownership assets and are usually left behind. On the other hand, investors have concern with this risk as it can affect investment value and project sustainability. Here, we propose thoughts of improvements for a better practice of land acquisition mechanism and Institutional arrangement with a case study in Indonesia. The proposed improvement is expected to achieve a win-win solution for Project Proponent and PAP by minimizing the economic losses and increasing the benefits shared between land users and the affected communities. This paper also highlights the importance of Stakeholders' engagement on effective management of the residual impact of land acquisition for infrastructure development in Indonesia. In this case, Stakeholders include Regulators, Project Proponent, Financiers, Local Government, NGOs, and other relevant stakeholders)

CHALLENGE ✨

Sustainable and inclusive growth and development in many countries have been transiently on track. However, the Covid-19 pandemic poses cumulative challenges to sustain livelihoods and economic and social stability. Although public funding is limited, the demand for financial support is rising in multiple sectors, requiring policy makers to make difficult decisions to cope with the health crisis and minimize its detrimental economic, social, and developmental impacts.

The Covid-19 pandemic is creating greater challenges in our idea and goals as to how development can be sustainable, inclusive, and resilient. Infrastructure development is essential to meet those needs. In the global world, the need for investment in infrastructure is high, while fiscal space remains limited. One of the interesting case studies discussed is infrastructure development in Indonesia. Central government focuses on infrastructure development with various initiatives in agenda, including providing lands for infrastructure advancement. However, in practice, there are social impacts on PAP due to land acquisition, particularly those affected by involuntary resettlement, are usually insufficiently mitigated. Based on the applicable regulation, the costs for land acquisition must be calculated with fair compensation, but it is common that residual impacts remain as some aspects are not fully counted. This happens a lot in many developing countries. Therefore, it is necessary to identify and analyze the social risks that occur in land acquisition for some infrastructure project. However, we need to consider the existing best practice with the capacity of the country, applicable regulations, and culture that can support the implementation of the project, as well as mitigate the risks that may occur.

Land acquisition can be considered one of the main difficulties in infrastructure investment. When a construction of a certain infrastructure project is planned, the project owners (usually government officials) must first negotiate with many landowners, which is a huge investment of time and money during periods of infrastructure construction (Yoshino et. al, 2019). The long process of land acquisition is the main factor that may cause project delay. Based on media monitoring of projects guaranteed by IIGF (showed in Figure 1), negative issues related to land acquisition dominate and become highlights in media coverage. From year to year, the trend of land problems tends to increase compared to other environmental and social issues.

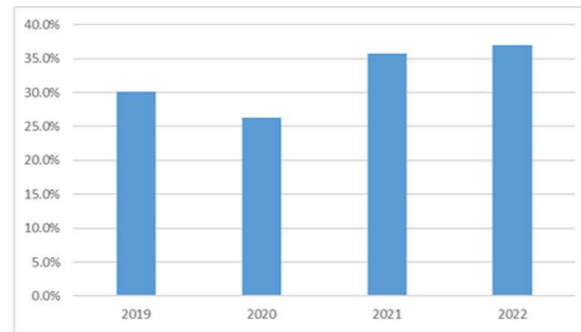


Figure 1. Trend of Land Acquisition Issues based on Media Monitoring

The complexity of land problems in Indonesia has forced the government to update regulations from year to year. Prior to the issuance of Law no. 2 of 2012, land acquisition requires a very long process. Project-affected communities are forced to hand over their lands and accept compensation from government (project proponent), sometimes even through social coercion. The amount of compensation is determined by the government, and the participation of landowners in the process is minimal. The new regulation carries out various transformation efforts in order to provide a fair replacement value by involving a licensed appraiser in accordance with the standards of the Indonesian Society of Appraisers (MAPPI). Community involvement in the process has also been regulated in Constitution No. 2 of 2012, where prior to the issuance of the Location Permit, public consultations were conducted to obtain public views on whether there is a potential project rejection. In the public consultation, the community has the right to file objections, so the Governor will form a team to assess the objections to accommodate the concerns of landowners. After the Location Permit is issued, there is a mechanism for deliberation in the form of compensation, where the community has the right to choose that will later be accepted as stipulated in the Constitution. If the form of compensation given according to the landowner is not as expected, they may file an objection to the State Administrative Court before receiving a final appeal at the Supreme Court. Table 1 below shows regulations regarding land acquisition for infrastructure development and the differences policy between each other.

Table 1. Regulations regarding land acquisition for infrastructure development in Indonesia

Criteria	Pre-Law 2 of 2012	Post-Law No.2 of 2012	Law No. 11 of 2020	Presidential Regulation 62/2018
Fair Value (Titleholder)	No	Yes	Yes	Yes
Compensation for Social impact	No	No	Yes	Yes
Recognition of Non-Titleholder	*No	*No	No	Yes
Third-Party Appraisal Team	*No	*Yes	Yes	Yes
Compensation Preference	No	Not stated on Planning Document	Yes, stated on Planning Document	No
Assistance in livelihood restoration	No	No	No	No
Project Length	*16 years	*4 years	5 years	n/a

Notes: *Guild, 2019

The law has brought clarity to what was a confusing and often contradictory legal landscape. It delineates the authority and its responsibility for procedural compliance and imposes hard deadlines that have greatly accelerated project timelines. For example, the completion of the New Yogyakarta International Airport - NYIA (Post-Constitution No.2 of 2012) took about four (4) years, while in Lombok (Pre-Constitution 2 of 2012) the process took 16 years (Guild, 2019). In 2020, the government issued a regulation as a legal umbrella on land acquisition for public use called the Constitution No.11 of 2020 known as Omnibus Law. Some changes regulated in Omnibus Law allow compensation for social impact and compensation preference (stated on Planning Documentation). The length of the project in Omnibus Law which is calculated based on the issuance of Location Permit is made more realistic with the estimated validity period of five (5) years.

However, despite the many updates on land regulations, the complexity of land issues still leaves residual impacts. Some still unclearly stated things in the regulations include the recognition of non-title holders and livelihood restoration assistance. Recognition of non-title holders is not specifically regulated in laws and regulations, but currently there is the Presidential Decree No 62 of 2018 which regulates the handling of social impacts, including non-title holders.

Although land acquisition regulations are continuously updated, if we look at Figure 1, the trend of issues related to land is still increasing. There are three (3) main issues that have been in the media spotlight for projects based on IIGF monitoring (2022), which are i) unpaid compensation, ii) compensation rejection, and iii) relocation of public facility. Unpaid compensation and compensation rejection are still the main issues. These two issues in most cases will be consigned (the compensation is entrusted to the court). Based on Law No.11/2020 and its derivative regulations, a consignment or deposit of compensation is carried out in the event that (i) the entitled party refuses the form and/or amount of compensation and does not file an objection to the court; (ii) the entitled party refuses the amount of compensation based on the decision of the district court/supreme court; (iii) the whereabouts of the entitled party are unknown; (iv) the object of land acquisition is still in dispute. What had happened is that most people who refused the amount of compensation did not file an objection to the court. The community saw the submission of objections to court as a complex process, so instead of dealing with a complicated process, they will end up receiving the amount of compensation. From the people's point of view, the regulation is seen unfair as there is no bargaining room and the resolution of the problem is only through the court. Therefore, the regulation should have a mechanism where owners of fixed assets are able to negotiate and thus can determine the form and amount of compensation.

Relocation of public facilities mostly arises from special character lands such as Waqf, Village Treasury Land (Tanah Kas Desa - TKD), schools and other public facilities that require a new relocation or replacement. After the issuance of Law No. 11 of 2020, issues related to special-character lands tend to decrease due to the determination of the status of special-character lands being raised in the planning stage. Figure 2 below shows issues related to land acquisition for infrastructure projects based on media monitoring conducted by IIGF.

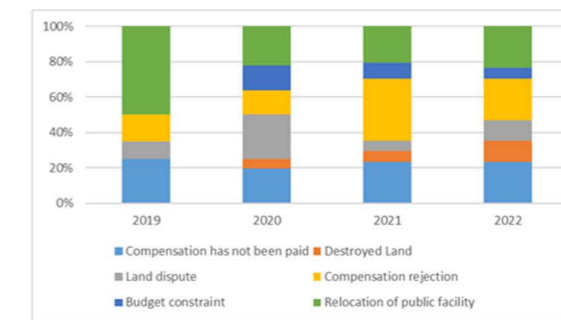


Figure 2. Issues related to Land Acquisition for Infrastructure Projects

PROPOSAL ✨

Availability of land is the key to success in providing infrastructure. However, it is important to note that apart from the availability of land, residual impacts on landowners and project-affected people need to be minimized. Therefore, this policy brief proposes several strategies as discussed below.

Regulation Framework

Regulations related to land acquisition stated in the Omnibus Law include: i) land status completion must be carried out until the location is determined. This is for land acquisition on lands with special characteristics such as Forest areas, Waqf, customary land, or government-asset land; ii) settlement of forest area land status can be carried out through the mechanism of forest-area release or borrow-to-use forest area; and iii) public consultations are carried out by involving the entitled parties, state/regional property managers, and affected communities, and set forth in the form of an agreement as the basis for submitting an application for location determination. The Omnibus Law applies the risk-based and strategic environmental assessment approaches that consider management of risks to health, safety, environment, involuntary resettlement, and carrying capacity of the environment, and consistency of activities with national, provincial, and regency/city spatial plans. The Omnibus law aims to increase investments for infrastructure development by ensuring project risks to be well managed. The government is responsible for providing land and is committed to managing the arising risks, while investors are responsible for providing quality infrastructure.

High-quality infrastructure increases business activities and can potentially create a new employment in the region, which includes the Project-Affected People (PAP). It also provides more opportunities to encourage female participation in the workforce and to narrow income disparities (Yoshino et. Al, 2019). The involvement of more women as participants among the PAP will be in line with the SDG which is Gender Equality. Therefore, more infrastructure projects should not only provide financial compensation for the affected people but also labor compensation due to the losses of steady income, with a heavier focus on women.

The proposals that we submit in terms of the regulatory framework are as follows:

- A framework that provides a reference in the implementation of meaningful public consultations. This is to identify the affected stakeholders, methods of public consultations, and outputs that need to be generated. This is to ensure that all Parties receive the right information and room to convey input and wishes for their assets.
- Adoption of international best practice needs to pay attention to the local socio-cultural conditions in order to gain solutions to the existing gap. The Government and Project proponents/Investors need to understand PAP's interests regarding the prevailing socio-culture, as well as the parties who are representatives of the community. Therefore, the implementation of best practice must be flexible and government officials must understand the conditions in each area. Therefore, communication between the Government, Investors, and Lenders is crucial to formulate social impact mitigation by considering the social culture characteristics. For this condition, it is necessary to make an equal risk-allocation framework between the Government (central and regional) and Investors to ensure that risk management is carried out properly and fairly, both in terms of funding, implementation, and monitoring and evaluation.
- If land acquisition causes losses of income or livelihood for the PAP, Government and Investor, according to the risk allocation, must compensate them. It can be done by compensating affected business owners for the cost of reestablishing commercial activities elsewhere, or by providing new employment aimed towards the displaced people. Furthermore, the most important thing is assistance to PAPs to ensure that the compensation received can be managed properly and they may continue living well.
- The government encourages creative financing, such as: Public – Private Partnership, Blended Financing, Trust fund, etc., by considering global standard, including the implementation of Environmental, Social, and Governance (ESG). The implementation of ESG will assist investors in making investment decisions as the project proponent has managed environmental and social risk and governance as well. Implementation of these standards will certainly reduce the project's social and environmental risks, which in turn can be an increase in project sustainability.

Land Bank as Financing Institution for Infrastructure Development.

Land financing is one of the challenges for successful land acquisition and delivery project. This is due to the high demand for land, yet limited land availability. The government is trying to meet the land funding using state budget, but there are limitations. Therefore, it is essential to innovate by establishing a financing institution that not only undertakes land acquisition, but also manages these assets. What we propose are:

- Land Bank that can play a role in funding, procurement, and management of land assets to be used in infrastructure development. Land Bank can buy or rent to the landowner considering reasonable profits for both parties. This will certainly provide room for landowner to decide whether to lease his assets to the land bank and obtain benefits for the duration of the lease or sell their assets. Furthermore, the Land Bank can lease its land to investors during the concession period and get a reasonable margin that is used for operations and investments.
- Land Bank is given a mandate to manage land, including managing environmental and social risks arising from assets acquisition. The risk management can be structured into land-rental fees to investors to ensure risk management sustainability for PAPs. Obviously, this must be supported by regulations, good resource capacity, and the support of all Stakeholders.
- Land Bank can get benefits from Land Value Capture from their assets. By developing a property with mixed-use development and improved locational accessibility, the land value and real estate's price around the transit nodes will increase significantly. With the increment of land value and property prices, the government can implement the Land Value Capture (LVC) model through special taxes and incentives for real-estate developers who obtain benefits from the increment of land value and property prices. Integrated transport and land use development are encouraged as one alternative to alleviate fiscal constraint of public transport (Van Der Krabben et al, 2020). Other than LVC, land readjustment schemes can also be utilized. De Souza and Koizumi (2020) analyze the changes in land prices more than 30 years after the first land readjustment pilot project was initiated in Denpasar, Indonesia. Land adjustment is a scheme in which landowners collectively pool their lands and donate their property to the government where they will redesign the area with better infrastructure, public services, parks, etc. In exchange, landowners will receive an increase in property value from neighborhood improvement. Results from the difference-in-differences estimator indicate an increase in land prices of up to 49% in land readjusted areas when compared to urbanized areas without the planning instrument (De Souza and Koizumi, 2020).

Alternative Approach to Sustainable Urban Mobility in Developing Countries

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ABSTRACT ✨

Cities in developing countries are facing intertwined urban mobility challenges: urban sprawl and traffic jam. Having not enough reliable and standardized public transport supply means the residents are forced to opt for traveling by private vehicles such as cars or motorcycles. There is a swell of tailpipe emission and economic losses due to traffic jam. Overcoming urban sprawl and at the same time building massive public transport is not an easy feat to accomplish, as both require immense investments and years of construction. Therefore, cities must have innovative plans to increase public-transport coverage and articulate density through paratransit formalization & digitalization, demand management, and land consolidation.

CHALLENGE ✨

Transportation sector accounts for 16% of global CO₂ emission. Particularly, road transport made 70% of that number (Ritchie et al., 2020). Most of the road transport activities take place in urban settings. This sets challenges to cities to achieve sustainable mobility goal and the Paris Agreement goal. The Paris Agreement or the Paris Climate Accords is an international treaty on climate change, adopted in 2015 (Wikipedia). In developing countries' cities, having not enough reliable and standardized public-transport supply means they are forced to opt for traveling by private vehicles such as cars or motorcycles. As a consequence, the tailpipe emission from the transportation sector is also increasing, as well as time spent in a traffic jam. In a country where the market plays a significant role in dictating housing price and insufficient coordination between transport and land-use policy, urban sprawl is likely to happen. Many cities in developing countries (e.g. Jakarta, Indonesia and Mexico City, Mexico) have been developing the dispersed densities type of built environment in sub-urban centers (Woltjer, 2014). Not to mention that cities also have been implying single-use zoning in certain areas. Both have led to inefficient land use and urban sprawl. This exacerbates congestion and pollution as urban sprawl prompts citizens to drive their private vehicles since the low-density residential area in peri-urban is often times barely covered by reliable public transport.

On the other hand, there is a demand for ageing downtown area to be regenerated. One of the several characteristics in global south cities is the declination of urban population at the core area or at least outpaced by the growth at the peri-urban area (Woltjer, 2014). This provides not only challenges, but also opportunities for the city government to transform downtown area into a more ideal urban design. An ideal density to be served by public transport is the articulated density, where dense development takes place in a certain radius from a mass transit station. Both require immense investments and years of construction to reach that ideal, which is unaffordable by many cities in developing countries. Transforming the city to an ideal articulated density along the mass transit corridors is time consuming (Bertolini, 2012; Suzuki et al., 2013). Therefore, cities in developing countries with limited fiscal capacity which are currently experiencing severe congestion must think of another approach to sustainable urban mobility.

Building ideal articulated density together with the mass transit corridor requires an immense investment, to which cities in developing countries are lacking. Also, collaborations with the private sectors under Public-Private Partnership (PPP) scheme on heavy infrastructure seems below expectation. From 1995 – 2004, only 55% of PPP projects were completed (Leautier & Kim, 2007). The Covid-19 Pandemic also made city government's budgets shift to health-related spending. As a record, other revenues for public-transport operations (e.g., dedicated taxes and government subsidies) have dropped (International Public Transport Workers Federation, 2020). In a ticking clock against the climate crisis challenges, cities in developing countries must think of another approach to providing mobility and accessibility to their inhabitants in a sustainable way besides massive & heavy investments of public-transport infrastructure.

PROPOSAL ✨

This proposal comes in a sequential step. Initially, it starts from undertaking spatial-based assessment to map the location that needs public-transport supply the most. Paratransit formalization is important to tap the reliable public-transport supply into high-density areas in an economical way and less social conflict with existing operators. Digitalized information and integrated ticketing between each different mode will benefit passengers; therefore ridership will increase consequently. On the other side, private vehicles should be hindered, stimulating people to shift to public transport. Another result from the assessment is the identified area to increase the density of the development around the station.

1. Accessibility analysis

It is a general check-up for a city to identify and classify areas based on their density and accessibility. In doing so, relevant and accurate measures can be designed and implemented. It identifies the prioritized areas for additional supply of public transport. One of the tools that measure accessibility analysis is LUPTAI (Pitot et al., 2006). This tool has helped Gold Coast in measuring the potential locations to be densified and served by public-transport services. For cities in developing countries that are aiming for more sustainable mobility, this tool could assist the political leaders and policy makers in both making quick wins and also long-term changes.

Providing reliable public-transport services to dense residential area is the quick win that could gain public support and consequently provide greater opportunities in securing bigger budget for public-transport subsidies. For quick wins, the type of public transport is not necessarily rail-based that need heavy investments and long-time construction process. Providing road-based public transport such as bus or minibus is easier, less complicated and it requires less upfront costs. At the beginning, the bus/minibus functioned as feeder services that facilitate first-mile and last-mile journey. Therefore, it connected the passengers to the trunk/back bone services run by Bus Rapid Transit (BRT), Tram, Mass Rapid Transit (MRT), or Regional Train. Public-transport coverage area has also improved which increases the number of commuters served by the public transport. Eventually, when the demand increases, the road-based public transport could be upgraded to a more massive means of transportation with bigger capacity (per passenger per hour per direction). It could be in the form of BRT with special lane, tram, or even MRT.

Accessibility analysis also provides insights on the long-term housing policies. Residential area located within a walking distance from public-transport stops should be densified. This means zoning law should be amended accordingly in order to make the property developer and asset owners to adjust their long-term business plan.

2. Paratransit formalization

In many developing countries, public-transport services are operated by private companies with little to no government intervention on subsidies and minimum service level obligation. Therefore, the public-transport services follow the market/demand. For example, the stops and the schedules are not fixed. Even sometimes the route is not fixed. Those mentioned above are the characteristics of a paratransit service. It has a broad spectrum ranging from legally incorporated service with global business model (taxi) to local wisdom services (jitneys/matatus/angkot). Nevertheless, they all have similarity in terms of capacity where almost of all types of paratransit could only accommodate maximum 15 passengers in a vehicle (less than a regular bus).

The flexibility and small-vehicle capacity could benefit the government by expanding public-transport services, particularly in a low-articulated density residential area where land-use and transport planning fail to interact with one another. Not only applicable to developing countries, cities in developed nations could also maximize the advantages of paratransit combined with the burgeoning advancement in technology such as on-demand public transport (see below – digitalization) and electric-driven autonomous bus.

The term paratransit formalization means the government supports the paratransit operation in a form of a regulatory framework and financial means. Formalization aims to increase the level of service of paratransit and consequently formalized paratransit acts as a feeder to the trunk line. The formalized paratransit that has little to medium capacity possibly serves better and more efficiently in a low-density development. Arguably formalizing paratransit is cheaper and faster to increase public-transport coverage than it is on mass transit. Hence, the formalization of paratransit would create a contractual and reciprocal relationship between paratransit operators, public-transport management company (government-owned enterprise), and the government, that would bring advantages to the public, especially passengers. The operators will receive payment based on the distance travelled, the government will receive services that meet the standard-level agreement, and the public will receive convenient and reliable public-transport services. For instance, the route, the stops, and the schedule of formalized paratransit services would be fixed and standardized, which leads to more reliable service. Travel time could also be expected due to zero additional waiting time for the vehicle to be completely occupied. From the safety end, formalization would eliminate reckless driving style as it is a common practice in paratransit to race for the potential passengers.

3. Digitalization

Digitalization and information distribution of formalized paratransit will benefit both the operators and the passengers. For passengers, the term Mobility-as-a-Service (MaaS) revolves around integrating the information and payment from different modes of transport. Passengers will instantly get information on how to get from their origin point to their destination seamlessly through the journey planner in MaaS application. The anxiety of waiting will decrease as the MaaS application provides live tracking and Estimated Time Arrival (ETA) for each vehicle in certain stops. The combination of fixed routes, schedules, and stops with digitalization will create a convenient user experience during the trip for the passengers.

On the other side, operators will benefit from the digitally kilometer-traveled counting. It gives fairness to both sides, the operators and the bus management company. Furthermore, this will open opportunities to a more efficient daily operation, where fleet can be assigned to several routes in a day. On the contrary with paratransit formalization, in this digital age we have the opportunity to consolidate demand. Technology allows public-transport fleet to operate in a flexible route and virtual bus stop, following the demand. Demand-responsive transport is perceived helpful for operators in covering more demands and increasing passengers, especially in the less dense area. There is also a possibility to explore the usage of self-driving electric-bus for demand-responsive transport operation, which will lead to cost reduction due to zero drivers' wage expenses.

4. Transport demand management (TDM)

After giving options to citizens for their mobility needs by increasing the coverage of reliable public transport, it is important to limit their private motorized vehicle usage using push measures in TDM. Otherwise, in a culture that was built alongside urban sprawl development, people will always have the necessity to use their private vehicle.

Good public-transport provision requires proper public-service obligation (PSO)/subsidy, which is expected to come from the government. As the government sets minimum service level and public-transport tariff to the operators, the government should also bear the deficiency if the fare box revenue could not cover the operational expenses through subsidy mechanism. It is important to increase the public-transport ridership (this is also the reason why the government needs to build denser residential & mixed-use area), in order to make the fare box revenue increased. However, revenue from ticketing would not be sufficient to return the investment, let alone operational expenditure.

In order to increase ridership, the government should hinder private-vehicle usage through the implementation of push measures in TDM, which consists of fiscal and physical restraint. There are many examples of physical restraint implemented worldwide, such as number plate restriction, pedestrianization (converting vehicle roadway into active-mobility-only street), and emission standard restriction.

From the fiscal point of view, the government should make private-vehicle usage more expensive than taking public transport. Increasing parking tariff and implementing congestion charges are two of the most common best practices implemented in many livable cities. Not only shifting passengers to public transport, the earnings coming from the parking tariff and congestion charges could also be the revenue stream for government subsidy for the public-transport investment and operation.

5. Land consolidation

According to the result of accessibility analysis, areas with high accessibility of mass public transport but low in density should be transformed into highly concentrated densities within walking distance from the mass transit stations. Transit-oriented Development is the common approach to increase concentrated (articulated) densities within mass transit stations surrounding.

Designing and building a transit-oriented development is much easier if it takes place in an empty, vacant land (Greenfield development) area. However, many cities in developing countries are built in unplanned sprawling way and most of the times the land parcels have irregular shape. These situations create challenges for implementing transit-oriented development and increase articulated density. Land consolidation could support the government in achieving dense and diverse transit-oriented development by grouping landowners in the planning area. Afterwards, the landowners will either get smaller yet organized shape land parcels or an ownership in vertical housing. This will lead to more available land for developing public amenities or public infrastructure. The redevelopment will increase the value of the land/building of landowners. Moreover, extra vacant lands to be sold to the government/private sectors will benefit landowners.

Similar to landowners, the government could benefit from land consolidation. It potentially brings quality of life betterment and economic benefit for the residents. For example, more people live within walking distance from the mass transit stations, better residential area with proper public services, more public parks to be built, and others. However, the government should incentivize land consolidation and urban regeneration, so the landowners and private sectors are interested in supporting this project. The government should also translate the policy into the regulation that supports the land consolidation and urban regeneration, including establishing governance for the entire project cycle.

However, this five (5)-step proposal requires budget allocations from the government. This translates into a robust political will to allocate the requisite budget for acquiring and converting paratransit into reliable public-transport services, which naturally fall into public goods category with various economic advantages for the city and society. Hence, the government should bear the fundamental financial needs for paratransit formalization. Covering operational expenditure in running paratransit at the minimum service level (formalized) will require a certain fare level, which most likely is not affordable to the lower-income bracket. The gap between fare box revenue and the operational expenditure according to the minimum service level should be subsidized by the government. Therefore, it is less likely that the private sectors could benefit from the operation of formalized paratransit. In the bigger picture, the government could pursue revenue from the demand management, or generate new revenue streams from public-transport digitalization and land consolidation. Both revenue streams could support the required budget for paratransit formalization (see demand management, digitalization, and land consolidation above).

Once the government secures the allocated budget for paratransit formalization and the betterment of public-transport services, they could start developing alternative financing mechanisms creatively. The endowment fund has the opportunity to provide options for public-transport operators, especially paratransit owners, in earning lower interest rates for fleet rejuvenation. Furthermore, it will reduce the number of contractual agreements between the public-transport management company and the formalized paratransit operator. This endowment fund could come from an unspent budget from the previous fiscal year or any investment thrown by the government. The formalized paratransit operator should repay the loan from the endowment fund in a more comfortable tenure. Another instrument that could lower the interest rate for fleet purchasing/rejuvenation is debt crowdfunding. The public-transport management company could be the guarantor for the debt crowdfunding since it has the bidirectional contractual agreement, both with the government and the paratransit operators. The prominent investors for fleet rejuvenation debt crowdfunding are those interested in contributing to carbon-emission reduction and those positively impacted by paratransit formalization. Similar to the endowment fund, the repayment tenure of crowdfunding should also be comfortable for the formalized paratransit operators.

This alternative approach is intended to provide more affordable and comprehensive options for cities in developing countries to achieve sustainable mobility. When ride-hailing is still waiting for positive cash flow, this alternative approach can disrupt the mobility services market, especially in cities in developing countries. Limited budget for sustainable mobility in developing nations could still yield high coverage and reliability public-transport services through this approach. However, this proposal still requires financing and political support. It is important to have a champion government with strong political will and persistent spirit to deliver this five (5)-step approach.



Identifying Tensions in Infrastructure Development using Public-Private Partnership (PPP) Mechanism

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ABSTRACT ✨

This research aims to identify tensions in infrastructure development using public-private partnership (PPP) mechanism. The tensions can hinder the optimized functions of infrastructure to achieve social, economic, political, and environmental goals. The tensions in infrastructure development are identified using a qualitative research methodology, in particular a questionnaire survey to fathom the perceived risks by associated actors and institutions, economic and financial condition, procurement processes, and the relationship between the public and private sectors. Using the lens of multi-level governance, particularly, this study highlights the role of intermediate agency connecting the role of the government and the private sector.

The emerging tensions during the process of PPP for infrastructure development can hinder the acceleration of infrastructure development. PPP has many challenges related to building trust between government authorities and the private sector, the approach in assessing value for money, the appropriate PPP schemes, management and processes during the procurement, the structure of the long-term payment methods, and unmanaged risks as a consequence of long-term contract for infrastructure development.

Analyzing the role of intermediate agency as technical and political advisers for both the government and the private sector sides will help reducing the tensions in infrastructure development. By identifying the potential and the capacity of intermediate agency to connect infrastructure development across different development agenda, the local government should be able to improve the mechanism for PPP infrastructure development scheme.

This study will be benefits for G20 in achieving the goals of three pillars for global health architecture, digital transformation and sustainable energy transition. The development of these three pillars is based on the availability of physical infrastructure that accelerates the development of Sustainable Development Goals (SDG). The use of PPP as an alternative financing for infrastructure development will benefit the society, particularly for inclusive, resilience, and greener infrastructure development. In the long run, this will contribute to the achievements of G20's goals and the acceleration of SDG.

CHALLENGES ✨

Infrastructure development is an essential part to support green, inclusive and sustainable development, mainly to recover from the Covid-19 pandemic in the global world. Public-Private Partnership (PPP) serves as an alternative financing mechanism for infrastructure development. However, the emerging tensions during the process of PPP for infrastructure development can hinder the acceleration of infrastructure development. PPP has many challenges related to building trust between government authorities and the private sector, the approach in assessing value for money, the appropriate PPP schemes, management and processes during the procurement, the structure of the long-term payment methods, and unmanaged risks as a consequence of long-term contract for infrastructure development. Castalia (2014) argued that barriers to infrastructure service delivery in Sub-Saharan Africa and South Asia are related to inadequate resources and excessive costs, barriers to private investments, governance barriers, funding availability, and others. These barriers have impacted upon the efforts to scaling up of infrastructure services. In India, for example, it is the case of urban transport. Private operators are facing problems in providing transport services and profit gains. There are also bus transport authority problems for financing, and the consumer problems against the quality and quantity of the transport services (Mehta, 2010). These complexities are in need for a proposed integration of public-private partnership in services

PROPOSAL ✨

This research aims to identify tensions in infrastructure development using public-private partnership (PPP) mechanism. The urgency of identifying tensions in infrastructure development especially through such mechanism is based on the government's inability to provide the needed infrastructure to improve public services. The private sector has the ability to provide financial resources, technical expertise, risk management, and skilled labors to manage PPP projects for infrastructure. The tensions can hinder the optimized functions of infrastructure to achieve social, economic, political, and environmental goals. The tensions in infrastructure development are identified using a qualitative research methodology, in particular a questionnaire survey to comprehend the perceived risks by associated actors and institutions, economic and financial condition, procurement processes, and the relationship between the public and private sectors. Using the lens of multi-level governance, particularly, this study highlights the role of intermediate agency connecting the role of the government and the private sector.

At the national level, the intermediate agency (in the case of Indonesian PPP context) is seen as the role of state-owned enterprise dealing with both the government and the private sectors. This agency builds communications with the central and local government institutions aspiring to pursue PPP projects for the infrastructure development. However, at the local level, the knowledge about PPP mechanism is lacking, due to limited networks, knowledge sharing, and dialogues on the importance of PPP mechanism to reduce the backlog in infrastructure. The qualitative research approach methodology is used to analyze the role of intermediate agency in reducing tensions in infrastructure development. It was a questionnaire survey to understand the perceived risks by associated actors and institutions, economic and financial condition, procurement processes, and the relationship between the public and private sectors. And by using the lens of multi-level governance, in particular, this study highlights the role of intermediate agency connecting the role of the government and the private sector. Analyzing the role of intermediate agency as technical and political advisers for both the government and the private sector sides will help reducing the tensions in infrastructure development. The local government will be able to improve the mechanism for PPP infrastructure development scheme by identifying the potential and capacity of intermediate agency to connect infrastructure development across different development agenda. However, there is no specific unit of PPP office at the local-government level to support the implementation of PPP projects initiatives. Therefore, the role of the intermediate agency will help examining the institutional reformulation at national, provincial, and local government level, to formulate applicable PPP regulations, and increase private sectors' involvement in PPP projects. Further, PPP environments are influenced by the policy formulation, regulatory/legal framework, institutional capacity, and financial support (Verougstraete, 2014). All these elements are associated with economic and business climate, which influence the percentage of PPP mechanism for infrastructure development. Factors to increase the use of PPP need to take into account regulatory framework, institutional arrangements for PPP, preparation, procurement, PPP contract management, and proposals for initial infrastructure development. Assessments are essential to analyze the existence of the specific PPP laws and regulations, role of the the PPP units, the preparatory activities taking place prior to the procurement process that need a comprehensive planning. The selection process to access the private partners is undertaken with required terms and activities. In addition, PPP contract management is also essential to analyze as the activities and contractual provisions will become liabilities and therefore will have an impact on the implementation of PPP projects after the contract awards have been signed by all involved parties. In the PPP contract management, perceived risks and risk management are outlined as part of legal frameworks that bound all parties together.

In the uncertain circumstances, due to natural and non-natural disasters, such as earthquakes, flooding, Covid-19 pandemic, and others, perceived risk and risk management can put some pressures on budgets and financial calculations for the PPP Projects. More systematic methods to calculate the financial elements of the PPP Projects are needed more than ever.

RELEVANCE TO G20 ✨

This study will be benefits for G20 in achieving the goals of three pillars for global health architecture, digital transformation and sustainable energy transition. The development of these three pillars is based on the availability of physical infrastructure that accelerates the development of Sustainable Development Goals (SDG).

G20 platform plays a significant role in formulating benchmarking government's capability for PPP projects during the planning, implementation, and performance of the infrastructure delivery. The main goal of infrastructure provision is to enhance the quality of public services in terms of economic, social, and environmental aspects. Building benchmarks among the G20 governments will help developing standardized mechanisms for PPP Projects, allowing them to share knowledge, as well as allowing the private sectors to develop their capacities and capabilities to adjust with the existing development challenges. In conclusion, PPP is significant to infrastructure development in many countries, as it can help both the government and the private sectors to work together to improve the quality of public services. An active role of the government is essential since PPP is complex in itself due to requirements for political support and specific expertise and capacity in undertaking the PPP projects. Legal and regulatory framework is developed by the government, which has impacts on the active involvement of the private sectors in infrastructure development. Government's resources are contributing to the successful implementation of the PPP Projects. For projects to gain attraction for investments from the private sectors' side, the perceived risks and risk management are outlined clearly to ensure that the economic benefits are still reasonable.

The G20 has a strategic role in connecting both the major developed and emerging economies to secure future global economic growth and prosperity for all, with no one left behind to achieve 17 goals of SDG. This role is supported by the fact that the G20 members represent more than 80% of the world GDP, 75% of international trade and 60% of the world population. The vision of "recover together recover stronger" shows a strong commitment of all to change the future together with joint forces in collective ability to create an inclusive and sustainable foundation for growth.

Focusing on the three main pillars for G20 Presidency, Indonesia aims to accelerate the global health architecture, sustainable energy transition, and digital transformation. All these three main pillars need support of infrastructure development to ensure the achievements of SDG. The deepening of infrastructure financing is one of the main efforts to support infrastructure development. Sharing knowledge, experiences, technologies, methods, systems and best practices are essential to create benchmarks for PPP projects in planning, implementation, and monitoring performance for sustainable infrastructure development. Countries with less capabilities and capacities in undertaking PPP Projects, particularly perceived risks and managing risks, can speed up and learn from other countries. This way, all nations can have the same power to deal with the existing global problems of poverty, Covid-19 pandemic, and global crises as well.

Government Risk Management Enhancement on PPP's Project Implementation in Indonesia

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ABSTRACT ✨

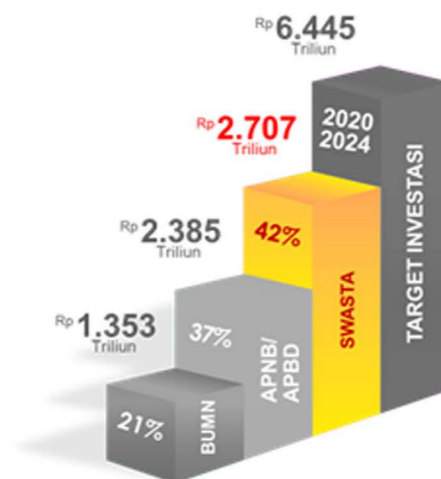
Indonesian Presidential Regulation No. 78/2010 Chapter 4 (c) states that Infrastructure Risks originating from the government other than the Government Contracting Agency (GCA) can be given an Infrastructure Guarantee facility. This facility has a potential to cause some issues considering that the budget for project risk allocation is prepared by the GCA based on the duties and functions of the organization itself. If the risk factor comes from the government other than the GCA organization, there will be an issue in justifying the budget calculation for the required risk allocation. This issue will become a Residual Risk for the GCA. With this condition, a guideline is needed in calculating the budget for the risk allocation from government risk factor other than the GCA organization.

Residual Risk (RR) are risks which are expected to remain after the planned response of risk has been taken, as well as those that have been deliberately accepted (PMBOK Guide by PMI, 2021). RR has a direct impact on the risk budget allocation that needs to be provided by the government. In contrast to project risk in general, managed by having mitigation action plans or response plans prepared, RR is handled by providing a contingency plan. Based on this explanation, it is understood that RR is a type of risk that is important to be managed in the implementation of PPP projects in Indonesia. For example, in this implementation, there is a Government Guarantee Facility for political risk originating from outside GCA, which means that this condition could lead to an RR since the government other than GCA is less controllable. In the risk matrix which is the reference for risk allocation in PPP agreement contracts in Indonesia, there is no explanation on how the government manages residual risk and the allocation of its contingency plan.

Residual Value (RV) is the value of a project asset when it will be returned or transferred from the private sector to the government. RV consists of tangible and intangible assets where both are the basis of value appraisal when the project is returned to the government. Residual Value Risk (RVR) is a risk that arises due to the project's poor condition when it is returned to the government with the project value being below the operational feasibility standard. The impact borne by the government due to poor management of the RVR can be fatal. Therefore, the government needs to provide a guideline or risk-management framework to oversee the RVR.

CHALLENGE ✨

The implementation of PPP in Indonesia is stated in the Indonesian Presidential Regulation no. 38/2015 where it has stipulated 20 infrastructure sectors that can be implemented under the PPP scheme. As a developing country with the 16th largest economy in the world, Indonesia still requires massive infrastructure development to support its economic growth. Indonesia has a target investment in the infrastructure sector of IDR6,445 trillion or USD450 billion (Bappenas, 2019), of which 42% or USD189 billion will be funded by the private sector through the PPP scheme. Indonesian government has provided various kinds of support for PPP projects to increase the private sector's interest. These supports include the Project Development Facility, Viability Gap Fund, Availability Payment Mechanism, Government Guarantee, Financing, and Land Acquisition Support.



(Bappenas, 2019)

In order to support the implementation of PPP projects with a huge funding requirement as previously described, a strong risk management is needed by both the government and the private sector. One of the basic principles in implementing PPP projects is a good risk management. Therefore, the government and the private sector must continue to undertake efforts to enhance the quality of the risk management.

Until now, there is no regulation or guideline in Indonesia that discusses the government risks factor outside the GCA, RR, and RVR in details. These three types of risks have direct implications for the risk management, especially in relation to the provision of government budgets for the allocation of risks. In accordance with the principles of a good risk management, a regulation is needed to manage the government risks factor outside the GCA, RR, and RVR. That is to enhance the quality of risk management.

PROPOSALS ✨

1. Defining the Government Risk Factor Outside Government Contracting Agency (GCA)

The Indonesian Presidential Regulation No. 78/2010 Chapter. 4 (c) states that one of the risks that earns the Government Guarantee is infrastructure risk originating from the Government other than GCA. This facility has the potential to raise issues when the GCA prepares a budget for risk allocation. To overcome these issues, it is necessary to develop a guideline in which the GCA can use risks originating from the government other than the GCA as justification for determining the budget even though its duties and functions do not belong to the GCA. This regulation can be compiled in the form of a Minister of Finance Regulation with a minimum content that includes an analysis of the government that can be the source of risk.

2. Defining the Residual Risk of the Government Risk Allocation in the PPP Contract Agreement

The Indonesian Presidential Regulation No. 38/2015 (e) states that one of the contents in the PPP Contract Agreement is regarding the risk allocation. In the PPP Contract Agreement document that has been developed, it has not accommodated the potential for RR to arise on the government side. The Indonesian Government Guarantee Fund (IIGF) as an entity that can provide Government Guarantees can support the management of the residual risk for the government. IIGF can provide risk analysis to develop the residual risk register and its mitigation plans. To realize this, the necessary form of policy can be carried out at the level of the Ministry of Finance or the IIGF itself.

3. Defining the Residual Value Risk Mitigation Plan in the PPP Contract Preparation

Based on PPP Guidance from APMG International chap. 1.2.12 "Residual Value/State of the Asset at Contract Expiration", RV is the value of an asset at the time the asset will be transferred by the private sector to the government. RVR is a risk when the RV has a low value, such as a situation where the asset returned is in poor technical condition and cannot operate to the desired standard. To improve the management of RVR, it is necessary to develop a guideline or framework to analyze RVR. The framework will be used as a tool to develop the risk mitigation needed that will be included in the PPP Contract Agreement clause.

Relevance to G20 ✨

The topic about PPP itself has a strong relevancy with the G20 agenda. One of the Task Force (TF) of the T20, the TF8, specifically will discuss about Infrastructure and Financing bearing the theme "Inclusive, Resilient, and Greener Infrastructure Investment and Financing". The TF8 policy areas include specifically about PPP scheme in infrastructure projects. The PPPs still play a big role in the infrastructure development of a nation, especially for a developing nation like Indonesia. The infrastructure development, including the creative financing scheme-related subject will be still an important topic of discussion for G20.

Electric-Vehicle Transition Evaluation from Cross-Price Elasticity of Demand as Supplementary Good Evidence and GHG-related Effects

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ABSTRACT ✨

Based on historic evidence related to technology developments arising into the society with the promise of cutting-edge energy-efficient goods and the inferior consequences, the presented paper proposes to evaluate the Electric Vehicles' new demand as a new technology intended to displace the ICE (Internal-Combustion Engines –known as the most common vehicles on roads) and determine if a new raw material market arises with the CO₂ (carbon dioxide) footprint of this industry and the links with the fossil fuel derivatives (Xing et al., 2019). The methodology (cross-price elasticities of demand) intends to evaluate all the data and evidence consistently in order to determine if, besides the main benefits of the massive use and implementation of BEV (Battery Electric Vehicle), the impact of this new industry will cause a non-reversible effect in humanity as once was caused by the gasoline even when at that time they were provided with enough proofs relating its poisonous substance with several humans deceases. Nowadays the relation is given the current world industry infrastructure and its emissions/contamination can beard a new industry demand that will duplicate (or more) the raw materials' demand in case the BEV ends up as a complementary good. There are clear guidelines from the government who is committed and involved in this new industry to determine the most accurate and responsible extraction of raw materials and production from developed countries.

CHALLENGE ✨

The baseline of the datasets analysis is to establish the year 2016 as the initial point due to two relevant characteristics. First, the Paris Agreement was signed that year. The Agreement contains the recommendations regarding the energy policies aimed to reduce global warming and its consequences. The second consideration is that a meaningful BEV started that year, making it possible to allocate enough information to compare. The threshold limit will be determined by the no-return point for climate change established in the agreement and set by 2030. The research is intended to compare two data sets for each industry, BEV and ICE. These datasets are "number of sales per year" and "amount of the production per year".

Cross-Price Elasticity: The Analysis will be tackled in the first stage under the "cross-price elasticity" of demand to show the relationship between both technologies and capture the responsiveness of the quantity demanded. (Curtis & Irvine, 2017).

PROPOSALS ✨

Evaluation 2016-2020: A first evaluation from the data will be achieved by comparing the datasets from 2016 with the same datasets by 2020. With the outputs, we can determine the accuracy of the current projections and introduce corrections to project the most accurate growth by 2030.

Evaluation 2016-2030: A second evaluation will be done between 2016 and the corrected projections up to 2030.

Evaluation of the substitutive conditions: Are both technologies substitutes for each other? The main purpose of the vehicles is transportation, no matter what the power source is. Thus, whether the technology is BEV or ICE does not affect the end-users' perception of the utility of the vehicle. In the case of both technologies, they will achieve "almost" the same performance. To homogenize the information, we are going to assume the specifications of the vehicle as non-sensitive for travels of up to 50 km in the Korean area. Therefore, by definition, the ownership of BEV will cause the consumers to desire less ICE.

Electrical Vehicles Vs. Fuel-Based Vehicles Demand: The outcomes are expected to be stated according to the trends in the industry and market that BEV is not a substitutive good. Therefore, it is a complimentary product which explains the projections in the vehicle industry with an increase in the trends of production.

Electrical Vehicles/ Electrical Vehicles Batteries – Raw Materials Demand: (ongoing) This may be caused by a new industry incumbent which will create additional stress in the raw materials' demand with all negative effects summarized in an increase of the CO₂ emissions. To determine the impact, the projections of the BEV will be calculated according to the projections of the future raw material demand up to 2030. An analysis of the raw materials' derivatives from petroleum will be resolved as well.

The promise of GHG (Greenhouse Gas) and CO₂ impact reduction from vehicle emissions by replacing the current ICE fleet with BEV under the perspective of the present paper seems to be probable, due to the outputs of the Cross-Price Elasticity of Demand Function ICE-BEV in all cases end up with positive results, which also means positive slopes. Despite the present findings, they are not consulting results due to the inner character of the emergent market of BEV, the accuracy of the databases and the lack of evaluation of different methodologies to project values and quantities in the future.

The Cross-Price Elasticity of the Demand Function ICE-BEV in all cases ends up with positive results, which also means positive slopes. Despite the present findings, the results are not determinants due to the inner character of the emergent market of BEV, the accuracy of the databases and the lack of evaluation of different methodologies to project values and quantities in the future.

The result from this research is intended to turn into a new scientific insight that provides trustable information related to the transition from ICE to BEV as the main driver in the race against climate change. This will allow policymakers to determine whether to invest in BEV infrastructure or other technologies such as electric trains, cable cars or other electric transport technology.

A key analysis must be focused on the policies implemented for the transition from ICE to BEV in order to determine how the policies articulate the inventory of the vehicle with the exit of ICE vehicles. This means, in a scenario where a consumer decides to change from ICE to BEV, once the BEV is in his possession, what are the options for the ICE? The consumer rationale is to use it which will convert the ICE into a complementary good or sell the ICE vehicle trying to recover the initial ICE investment. The concern in this consumer behaviour is that another vehicle consumer will decide to buy the ICE due to the hypothetical advantages in the price but that vehicle will continue in the vehicle's stock contributing to the GHG emissions. At the end of this consumer rationale, two vehicles will be in the same market motivated by the intention of the first consumer in reducing his CO₂ footprint.

Sustainable Independent Digital Village: Investment Connectivity of Maritime and Agribusiness

Komarudin Tasdik, STMIK Jabar, Indonesia

ABSTRACT

Indonesia still has a negative impact on the country's progress, such as unutilized land and equitable development. The purpose of this proposal is to build the digitization of maritime, agribusiness, and education investment in remote areas toward an independent economic community. Investment opportunities can take the form of smart village and smart campus development. Development must be integrated in a marketplace connected to the domestic and foreign sectors. This proposal can also be applied to address the gaps in other G20 members, such as India and Africa by integrating smart villages with Indonesia, Japan and Australia.

CHALLENGE

Indonesia is still at war with corruptions suspected to have a negative impact on the country's progress, such as social inequality, unutilized land, and uneven development in all corners of the country. This proposal is based on research conducted by direct observations and literature studies on previous research series. The purpose of this proposal is to support government policies in developing the digitization of maritime investment, agribusiness, and education in remote areas with a pilot project along the southern coast of West Java in order to create an independent economic community toward a prosperous country, not just a "rich country." G20 countries invest financially in increasing the productivity of marine fisheries and agriculture and Indonesia will generate the products of the three sectors into finished goods ready for export.

The United Nations conducted an e-government survey in 2020 with the theme of Digital Government in the Decade of Action for Sustainable Development [1, 7, 8]. This should be one of the cornerstones in setting policies to prevent social inequality and corruptions by digitizing villages toward a prosperous state.

1. Fishermen have difficulty selling their catch

Logically, the fish price on rural beaches should be cheaper than those sold at urban fish markets far from the coast. However, what happened is the opposite.

2. Agribusiness land has not been fully utilized The potential for tourism and agribusiness along the southern coast of West Java, Indonesia, is still not fully utilized as there remain many vacant lands that require long-term crops toward Sustainable Agriculture.

3. Digital Connectivity
Digital or internet connectivity in various parts of Indonesia such as in Sumatra, Kalimantan, and Sulawesi has not been maximized. In fact, southern part of West Java is still constrained by internet connections.

4. Environmental Protection

West Java's Nature Tourism to the South Ring Road which stretches along the southern coast from Pelabuhanratu, Rancahuaya, to Pangandaran [5] is prone to landslides. Additionally, the small number of employment opportunities in the village creates a greater opportunity for tree felling which will have a bad impact leading to landslides. If the government and the world can monitor the land digitally, it will be easier to protect the land.

5. Prior Studies

India as a member of the G20 has social inequality [11] that must be addressed immediately, including the existence of the low-caste people who scavenge human waste without protection [10]. On the other hand inadequate infrastructure in sparsely populated villages in Africa is one of the reasons the nation still being poor today although it is known as one of the richest countries in the world [13].

PROPOSALS

1. Digital Village

Maritime, agribusiness, and digital investment will turn strong if development starts from the villages [2, 9]. All investments and businesses built must be connected to digital technology to make transactions transparent, and monitoring easier. Thus, all elements of government's "fishing village" and "farmer's village" must be digitized, such as RT/RW to the central government. Accordingly, infrastructure is needed, both software such as a website marketplace, and hardware for signaling an internet connection signal.

2. Economic Resilience Through Home Industry

Work from Home (WFH) method during the Covid-19 pandemic must be an inspiration and consideration during the "new normal" era. The positive impacts include, among others, no urban congestions as rural residents or commuters do not seek work in the city, nor will large corporations monopolize small and medium-sized enterprises.

3. Digital Campus

E-learning method during the Covid-19 pandemic must also be a priority toward "new normal" online learning so that rural communities do not pile up in cities just to study. Even rural communities of a country can attend lectures organized by campuses from abroad while still carrying out their activities as professional fishermen and farmers.

To reduce the risks, it is necessary to conduct an analysis based on the Smart City simulation application [3] before implementing the three proposals above.

4. Building Digital Village and Smart Society

4.1 Integrated Digital Village System

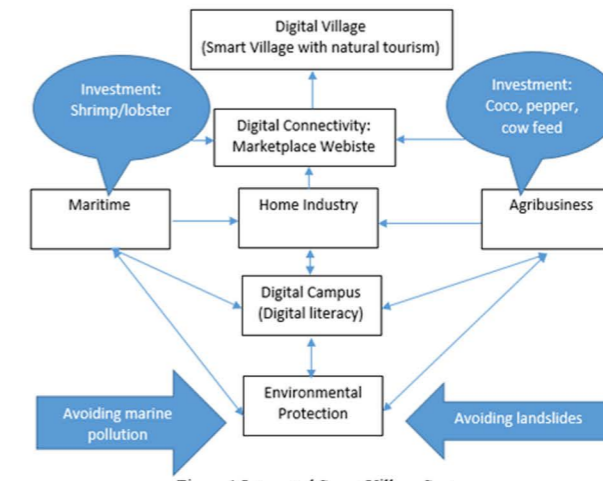


Figure 1 Integrated Smart Village System

Figure 1 shows that domestic and foreign investors can invest in the maritime and agribusiness sectors. For example, maritime investment can be in the form of investment to increase the productivity of marine fish, either sold unpackaged or packaged. Agribusiness investment can be in the form of planting coconut trees, even if it is a bit far from the coast, it can be done by planting grass or plants to feed animals such as cows. Maritime management and agribusiness must still pay attention to Environmental Protection to avoid seawater pollution and landslides. Prior to maritime and agribusiness investments, the campus conducted dissemination and learning to local communities related to maritime management, agriculture, and agribusiness. This is a part of digital literacy. Call it the digital campus with the name Katabah University (KU) located in Bandung city. KU prepares digital learning facilities (e-learning) bringing in experts and practitioners from maritime and agribusiness, such as from IPB, UI, ITB, UNPAD, UPI, UGM, STMIK West Java, or other campuses, and even from universities abroad such as Harvard, etc. Learning to the community can also be done, both online and offline. However, even though it was initially carried out offline, KU must try to direct the community (farmers and fishermen) toward a digital learning process.

The role of the Digital Campus or Smart Campus is not merely limited to the preparation of Human Resources, but it must also oversee the maritime and agribusiness management, as well as when it comes to product selling. Communications between Digital Campus and the community and experts are not one-way, but they must be built interactively so that farmers and fishermen have a place for consultations.

The management of maritime and agribusiness products is recommended for home industries so that the lower-economy community will get more positive impacts financially. Another consideration is that home industries have been proven to be resistant to national and global economic crises.

Digital Connectivity must be a major attention in implementing this Smart Village in its real form of a Marketplace Website. Investors, farmers, fishermen, Digital Campus managers interact more interactively in the marketplace. Even the government can also build e-government connections with the marketplace.

After the community, experts, investors, and the government interact in the execution of agribusiness and maritime in the marketplace so as to bring maximum economic value, a Smart Village that can monitor the economy of fishermen and farmers as well as investors is created. With this system, fish and agricultural products at harvest time will not result in a price decline (loss).

4.2 Digital Connectivity

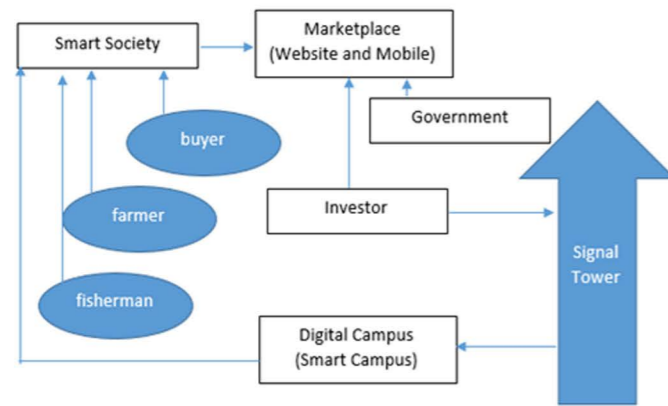


Figure 2 Marketplace

Through the Digital Campus, a Smart Society will be built consisting of fisherman, farmers, and buyers. Fishermen and farmers will sell their products at the marketplace and buyers will buy the products they need through the same marketplace. Regional and central governments can monitor the movement of transactions in the marketplace. The monitoring will enable the government to determine the estimated economic growth of the community, especially farmers and fishermen at the marketplace. Not only monitoring, the government will also be able to identify the village funds for community empowerment toward an economy independent village.

The main investment in marketplace development is the procurement of marketplace applications and the construction of internet support facilities, such as signal booster towers. Many villages in Garut, South West Java, are still left behind. They keep experiencing internet connection problems. This is a great opportunity for companies to invest in building internet support facilities. In addition, the procurement of Information Technology equipments is also very much needed by fishing communities, farmers, and consumers. With these facilities, the public will be digital literate and therefore able to transact at the marketplace.

4.3 Seafood Profit

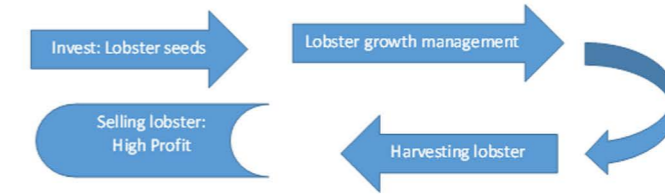


Figure 3 Lobster profit flow

Figure 3 shows that domestic and foreign investors invest in lobster seeds. The management of lobsters will be carried out by the Smart Society until harvest time. After harvesting, lobster transactions are carried out through a mobile friendly website-based marketplace.

4.4 Agriculture Profit: Pepper

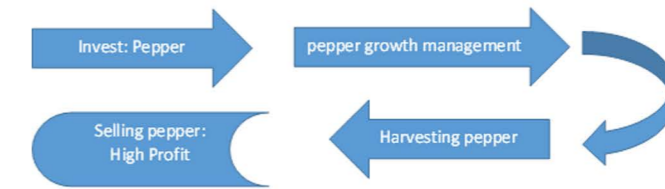


Figure 4 Pepper profit flow

Figure 4 shows that domestic and foreign investors invest in pepper seeds. Pepper management will be carried out by the Smart Society until harvest time. After harvesting, pepper transactions are carried out through a mobile friendly website-based marketplace.

4.5 Agriculture Profit: Cow

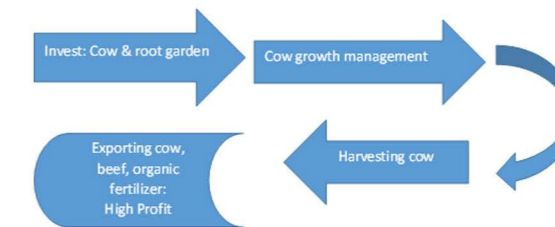


Figure 5 Cow profit flow

Figure 5 shows that domestic and foreign investors invest in cow and root gardens. Garden produces feed for cows. Cow management will be carried out by the Smart Society until harvest time. After harvesting, cow tradings are carried out through a mobile friendly website-based marketplace. The cow harvest is in the form of cows, beefs, and organic fertilizers.

4.6 Tourism Profit

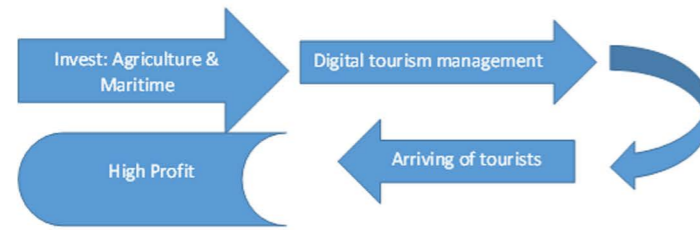


Figure 6 Green profit flow

Figure 6 shows that domestic and foreign investors invest in agriculture and maritime sectors. The management of agriculture and maritime affairs will be carried out by the Smart Society including ticket sales and transactions for tourists, such as hotel rentals, food purchases, food and souvenir purchases. All processes are done digitally.

4.7 Digital Village Integrated in a Country

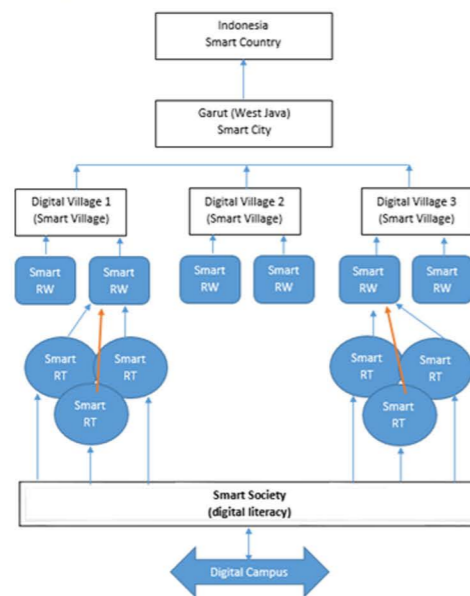


Figure 7 Smart Village in National Level

Figure 7 shows that the digital campus educates the public to be literate in Information Technology (IT) to maximize their economic activities. To be more organized, the RT escorts the community to use the marketplace organized by Smart Village. All RTs in one RW must be unified in supporting each other to use the marketplace.

After one RW is able to run the marketplace well, the marketplace use must also be disseminated in all RWs in one village. Thus, one village will have a marketplace that can be used by all villagers with monitoring at three (3) levels, namely village, RW, and RT levels.

If Smart Village is able to realize a digital village through the marketplace website, then the village can be used as a model or example for all villages in Garut district, West Java. If the district level is able to monitor its citizens in improving the economy through the use of marketplaces, then marketplace integration will be built throughout Indonesia with the main attention being on public participation in the use of a national integrated marketplace.

4A country that has monumental physical symbols will not be able to participate in building a prosperous world society. On the other hand, if a country is able to build a prosperous society, then the people will be able to build businesses with those of other countries toward world welfare. Maritime, agribusiness and digital investment will be very strong if it is initially built at digital villages. All businesses built on these investments must be connected to digital technology to make transactions transparent, and monitoring easier. Before making a real investment, an analysis must first be carried out through a Smart City simulation application to reduce the risks. Economic Security through Home Industry must be carried out with a Work from Home (WFH) pattern of work, except for certain jobs and Learn From Home (LFH) so that rural communities can study with international-class quality while continuing to carry out their professions as fishermen, farmers, and professional agribusiness actors. If development is carried out involving a large number of people, both within one country and across countries, the power will be very compelling. When the development of marine productivity is increased, the agriculture around the sea must also be improved. Development must be integrated in a marketplace that is connected to digital government and digital development cooperations across countries.

Relevance to the G20 Members

This digital village proposal can be applied to other G20 members, such as India and Africa. Both countries can build a marketplace in their villages to facilitate agribusiness, maritime, or other business potential as promoted by Japan with the term "One Village One Product (OVOP) [12]."

Other G20 member countries such as Japan and Australia are also welcome to invest in Indonesia for the maritime, agribusiness and digital technology sectors. Investing can be done by increasing the number of marine fish nurseries, planting long-term plants, developing digital technology as a marketplace that can be monitored by the local and central governments and domestic and foreign investors as well. Meanwhile, Indonesia is free to export packaged marine fish and products in the forms of finished goods such as accessories and packaged agricultural products.

The government should consider starting an international-class campus with online learning, with Learn from Home (LFH) method. The main priority is to have a study program that can educate fishermen and farmers who will carry out their maritime, agricultural and digital connectivity investments.

Conclusion

The application of the Independent digital village based on Information Technology (IT) is a good breakthrough for building the village's creative economy, but its implementation must be supported through digital literacy for the community and good government policies. I recommend a smart-campus approach to realize the website as the main medium for a digital village that is friendly to the community and the local government. This recommendation is simple but has the potential to build an economy independence. This solution is also not limited to the agricultural and business sectors but can be adapted to other sectors with the development still based on one digital village first as a small-scale implementation stage. After success, the implementation can be in all villages in a country as a large-scale stage.

Policy Areas:

1. Enhancing safeguard policy for infrastructure development (climate, biodiversity, gender, minorities, displaced community, knowledge management, access to technology): (PA-3)
Building a smart village in underdeveloped regions
2. Managing and financing local and social infrastructure development: (PA-6)
Capital-investment cooperations from abroad to Indonesia, while Indonesia exports maritime and agribusiness products. This policy is not only for financial viewpoint, but also for supporting underdeveloped society to be digital literate.

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