Urban Transformation in a Globalising World, Innovations and Local Leadership: The Case of Denpasar, Bali

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Abstract. Located in the heart of the so-called 'paradise island' Bali, a medium-sized city, Denpasar is facing unprecedented transformation. As the capital city of Bali Province, which is the highest contributor for tourism sectors in Indonesia, it has experienced rapid economic and population growth. Coupled with pressures from global forces in the tourism industry, Denpasar could perceive both negative impacts as well as challenges due to the urban transformation. This paper concerns how a city deals with the unprecedented urban transformation and globalisation, a city in the developing world such as Denpasar can survive and achieve some progress. It aims to document and assess, in particular, local government's innovations and leadership in ensuring the sustainability of the city. It is a descriptive and exploratory, based on field works, interviews, FGDs, and the available secondary data. This paper has successfully explored that Denpasar has launched many innovations to deal with current problems and to ensure its sustainability. Aside from that, it argues that innovations and local leadership are keys for the city to be able to respond to an unprecedented urban transformation and a changing world, as the answer for lacking the empirical experiences of local context for advancing urban sustainability.

1. Introduction

By the projection, the urban population in the world would be increasing [1]. This condition will lead to some complex problems and challenges in the urbanised area. Sustainable Development Goals (SDGs) was initiated in 2015 to 17 goals and 169 targets as the global sustainability agenda for 2030. Those SDGs targets try to accommodate the complex and unprecedented problem, for instance, in the urban context (SDGs Target 11). Trying to avoid MDGs mistakes, SDGs attempts to promote local implementation which engages stakeholders in local context [2]. This would promote faster urban transformation in local stakeholders.

Transformation terms widely used to describe cities and systemic change in the context of socio-technical system (STS) studies [3] and social-ecological system (SES) studies [4,5]. The urban transformation as the process and the outcome of changing the systemic configuration of urban areas and mostly studied with a view to its sustainability performance, are framed by three perspectives: system change, urban structure, and urban system [4]. In this concept, the keys factor which constraint the performance of urban transformation are the policy and planning, agency, capacity, experimentation, geography, politic/power, and foresight. This concept leads to the necessity of future research about the practice of urban transformative capacity [4,6]. Urban transformative capacity, which developed from the idea of adaptive capacity, is the ability to "create a fundamentally new system when ecological, economic, or social (including political) conditions make the existing system untenable […]" [7]. In this
context, the SDG's goals 11 "Make cities and human settlements inclusive, safe, resilient and sustainable" are a policy to enhancing urban transformation.

To achieve the SDGs, especially goals 11, urban innovations are needed to accelerate local action to solve the unprecedented urban problems. Innovation has known as the new ideas, practice and or object as a result of the improvement process. It is a novelty action which more than a new idea, but extends into a practical dimension [8]. Then, urban innovation is described as a break from standard practice to develop long-lasting transformations in urban communities [9]. Here, the urban innovation covers not only public sector innovation but also in the community, and it involves many stakeholders, including the private sector [10–13].

However, in carrying out these innovations, it is necessary to have an experience of localising this process. Denpasar, the capital of Bali, has been experienced with urban transformation, which needs the innovation to deals with these changes. Here, the local wisdom has been playing actively to culturally rules the communities, including the planning process managed by the government. The availability of local institution makes the urban innovation approach in Denpasar have a unique characteristic compared to other cities. Because of that, this research discusses urban growth, transformation, impacts, and local innovations in responding to these changes. Further, it determines the essential factor from this local action that determines the successful in facing changes.

2. Methods

This research was an exploratory and prescriptive type of study and utilised with qualitative data both in primary and secondary data type. With this type of research, it explored the innovations that concern with urban transformation in Denpasar, Bali. The data has been built through several types of data acquisition, such as focus group discussion (FGD) with purposive stakeholders involved with urban innovation in Denpasar, secondary data analysis, interview, and fieldwork observation. Furthermore, the data were processed and discussed in the descriptive model, which focused on the local innovation found in Denpasar, considering the concept of urban transformation and governing the innovation.

3. Result and Discussion

3.1. Urban Transformation in Denpasar, Bali

Before became the provincial capital of Bali, Denpasar city just a sub-district which as the centre of Badung Regency, in its development, in 1960, Denpasar was designated to be capital of Bali, which previously located in Singaraja, before becoming as the provincial capital, majority of land use in Denpasar still consisted of rice fields [14]. Changes Denpasar to provincial capital automatically changes the spatial and non-spatial form. Moreover, Denpasar is a world tourist destination. This will be magnetism for people outside Denpasar for migrating to this city. At last, the flow of migration from outside areas to Denpasar occurs continuously every year. Not only residents in Bali, but residents outside Bali also migrating to Denpasar. These people want to try their luck and find a fortune in this city. Such conditions also affect the spatial and non-spatial conditions of Denpasar such as in aspect of population, land use, and economy.

In an aspect of the population, growth of Denpasar as the provincial capital and world tourist destination affects the increasing number of population in Denpasar each year. According to data [15,16], the population of Denpasar respectively is 532.440 people, 793.000 people, and 947.100 people. These tables show that the population of Denpasar has increased by an average of 200.000 people every 10 years, and this tends to be a high rate of population growth. Moreover, population density of Denpasar in 2002 was only 4,39 people/km², increased in 2010 to 6,21 people/km² and in 2019 increased again to 7,41 people/km². Population growth can affect various aspects of community life. Increase the population can cause various challenges in urban management such as waste management, water management, traffic management, community service management, and the others.

Other aspects, city growth of Denpasar affect land-use change aspect. One of the causes is population growth effect in increased housing demand. Finally, agricultural lands were converted in residential,
tourism, and commercial functions for fulfilling demand. In only eight years (2010-2018), conversion of agricultural land (paddy and non-paddy) to non-agricultural land is 3.66% [17–20]. Conversion of agricultural land to non-agriculture land is undoubtedly one of the challenges for Denpasar. Considering, agricultural land still needed in life and maintaining environmental balance.

### Table 1. Population in Denpasar 2000 - 2019

| Sub-district      | Population (thousand) |
|-------------------|-----------------------|
|                   | 2000 | 2010 | 2019 |
| Denpasar Selatan  | 152.69 | 246.31 | 305.4 |
| Denpasar Timur    | 100.60 | 139.13 | 160.2 |
| Denpasar Barat    | 156.80 | 230.72 | 273.6 |
| Denpasar Utara    | 122.35 | 176.84 | 207.9 |
| Denpasar          | 532.44 | 793.00 | 947.11 |

If agricultural land is reduced continuously, even until it runs out, it can affect the ecological balance. Maintaining the relationship between humans and the environment is one of Tri Hita Karana (the philosophy of Balinese life), so the existence of this agricultural land needs to be preserved.

On the economic aspect, economic growth of Denpasar can be seen from the contribution of each sector to Gross Regional Domestic Product (GRDP) of Denpasar. Data [21,22], at 2010-2019, there have been shifts in several sectors on contributing to GRDP of Denpasar. In 2010, five sectors largest contributing in GRDP were sequential is (I) Accommodation and Food Service; (P) Education; (G) Wholesale & Retail Trade, Repair of Motor vehicles & motorcycle; (F) Construction; and (A) Agriculture, Forestry, and Fishing. Meanwhile, in 2019, five sectors largest contributing in GRDP were sequential is (I) Accommodation and Food Service; (P) Education; (F) Construction; (G) Wholesale & Retail Trade, Repair of Motor vehicles & motorcycle; and (C) Manufacturing. Based on these data, it can be concluded that the main economic base of Denpasar is service, service for community and service for tourists.

3.2. Urban Innovation in Denpasar, Bali

The strict cultural rules which exist in Denpasar, or Bali generally, makes the innovation implemented differently. As an interview with many stakeholders, the cultural law or here called as custom law is more robust compared with typically Indonesia implemented rules. This caused by it has integrated with the religion, which states in Hindu-Bali Philosophy: Tri Hita Karana. Three key points that construct the success of innovation implementation are combining collaborative participation and leadership, the community institution support, commitment, and learning process in the government.

As proposed by the NUA, it is crucial to ensure the roles of local governments and local leadership in implementing and localising both SDGs and The NUA. Meanwhile, Denpasar, as a metropolitan area in Bali island, is having a strong cultural background which integrated with human life in the area. There is five innovation proposed to be awarded at the national level: Pro Denpasar and Integrated Services, Waste management, River Restoration, and Environmental-based tourism in the agriculture area.

3.2.1. Pro Denpasar and Integrated Services Building- ICT Related Program.

Since the growth of trends of smart city, Denpasar has developed a smart city initiative proposed by the Ministry of Communication and Informatics in 2017. Meanwhile, Denpasar Governance has introduced the ICT platform services called PRO Denpasar in 2013. PRO Denpasar (Pengaduan Rakyat Online – Online Citizen Support) website-based application that involves public participation, which is used as a tool to monitor and verify the achievements of development programs and civil complaints related to the implementation of development programs. PRO Denpasar trying to improve the quality of public
services, public participation, flexibility between government institution, the quality of decision making in public policy, and the quality of data centre. Not only about the involvement of public participation, but Denpasar city also develops an integrated services building that provides 154 types of services from 12 licensing and non-licensing sectors that are under the Office of Investment and One-Stop Services in Denpasar City. Integrated Service Building also has some facilities such as Call Center 112, Area Traffic Control System, PRO Denpasar, Data Center, GPS Tracking for Ambulance, Safe City, Geoportal, and Water Distribution Information System. While still on the initiative, all the programs proposed here could be urban tackle problems more efficient and improve public policy in the future.

These programs show the commitment of the Denpasar government to improve the quality of public services using technology. Some of the main stakeholders who participate in this initiative are the Denpasar Mayor, Informatics and communication Department, Investment and One-Stop Service Department, Tourism Department, Transportation Department, and Disaster Agency. This initiative is crucial as it directly relates to the creation of an inclusive city, where the public has access entirely to participate in the governance of the city.

3.2.2. Waste Management.

One of the most successful innovations in Denpasar has existed because of the participation of the private sector, adat (cultural local) institution and the community. The private industry in Bali is commonly managed their waste on their own. Still, there is an initiative to propose an Integrated Temporary Disposal Site, which provides 3R (Reduce, reuse, and recycle). Moreover, the waste bank process in Denpasar currently integrated with the government system called Sidarling, which makes the platform able to give incentives for the person who participated in the waste bank process. The proses of participation also involve the Desa Adat as an institution that promotes the involvement of the community in the waste bank process. This waste bank aims for reducing the amount of waste goes to landfill, initiating collaborative approach in an unpopular sector, and engaging the adat institutions in the public sector.

These programs show the commitment of the government, private sector, and community in collaborative planning. The existence of the adat institution also allowed engaging with any kind of urban problem, and it shows to be more optimal. The fact that through collaborations among stakeholders, the city able to initiate better waste management shows that the city has successfully implementing SDGs goals in the local contexts.

3.2.3. River Restoration in Tukad Badung.

The current Denpasar movement is trying to create a public space. Besides the physical development that is interested in a few people, it could be some trends as achievement in the Indonesian context. By visiting the Korean River Restoration Program, Denpasar mayor has to reclaim the riverside area of the Badung River. It sounds like the mayor is trying to beautification the river to attract people. To make the river more natural, the government put a net in the upstream area to prevent any waste flow in the area. The program aims to improve the function of the river as tourism and recreation, education, empowering local communities, and opening economic and tourism opportunities. It is a successful program in making the city more inclusive and safe. At present, the area became a popular place for both residents and visitors to enjoy the centre of the city, previously considered as 'slums' and neglected area.

3.2.4. Environment based Recreation Area.

The ecotourism Subak is an initiative by local people to increase the economy to a local farmer. Subak is a spatial organisation created in an agricultural irrigation system in Bali. The subak condition in Denpasar has decreased over time, but Denpasar still has in Sembung and Kertalangu. The subak, as an
unchanged land-use area, have to improve their land function to gain maximum income with agriculture area. This initiative is a collaborative program between the local community who are landowners whose land designated as eternal rice fields in the Denpasar Spatial Planning and private sectors. Kertalangu Cultural Village is a tourist destination that offers the beauty of rice fields. This area has an area of 80 hectares consisting of 4 hectares functioning as a venue, and the rest serves as paddy fields. Aside from that, it also is created a jogging track with natural views as an attraction to visitors. They also build some stand to sell some foods, drink, and facilitate a workshop about their local activities, such as farming. It is an innovative program which very much relevant to the SDGs goals 2, 3, and 11, combining between rice field conservation and recreational spot accessible for the public.

3.3. Discussion
From those initiatives, Denpasar gives an example of how innovation can lead the transformative capacity and consider the community with their cultural wisdom and social learning process as part of urban governance. This capacity considers that the framework which directly connects on local approaches can accelerate the radical urban change towards sustainability [4,6,23,24]. Moreover, some of the key findings on the practical innovation in Denpasar such as transparent public service (as the indicators of inclusive governance) and the collaborative governance between several stakeholders, sectors, and hierarchy, helps to deal with the urban transformation and achieve the sustainable cities. These initiatives are remarkable because of the relation with the leadership quality, both at the city and community levels. Results from FGD and interviews have proven that such initiatives are possible because of the leadership.

Aside from that, the urban initiatives in Denpasar described have been linked to SDG’s Target 11 (table 2). However, some of SDGs target indicators are not pointed by any initiatives. For example, target 11.2: Affordable and sustainable transport systems, and Target 11.5: Reduce the adverse effects of natural disasters. Target 11.2 has still become a challenge in an almost urban area in Indonesia. There is still limited initiative in this target and mostly have collaboration with the central government to implement this target. In Target 11.5, despite the potential in tsunami and earthquake in Denpasar, there are minimal case happen in Denpasar, so there is a minimal initiative to be implemented in this target.

Table 2. Urban Initiatives in Denpasar and SDGs Target 11

| Urban Innovation | SDGs Target 11 |
|------------------|----------------|
| Pro Denpasar and Integrated Services Building-ICT Related Program | Target 11.3: Inclusive and sustainable urbanisation |
| Waste Management | Target 11.6: Reduce the environmental impacts of cities |
| River Restoration in Tukad Badung | Target 11.1: Safe and affordable housing; Target 11.7: Provide access to safe and inclusive green and public spaces |
| Environment based Recreation Area | Target 11.4: Protect the world’s cultural and natural heritage; Target 11.7: Provide access to safe and inclusive green and public spaces |

4. Conclusion
There are five initiatives from Denpasar in response to the urban transformation: Pro Denpasar and Integrated Services, Waste management, River Restoration, and Environmental-based tourism in the agriculture area. Such initiatives are not only relevant to the achievement of the SDGs, but it would give precedents how innovation can lead the transformative capacity to cope with urban transformation and manage sustainable cities governance. As mentioned previously, urban innovation is described as a new idea to break the standard practice. These initiatives in Denpasar are a new and fresh idea which are then transformed into problem-solving in the city. These are considered genuine initiatives lead by good local leaderships both at the city and community levels.
5. References

[1] United Nations, Department of Economic and Social Affairs PD. World Urbanization Prospects: The 2018 Revision (ST/ESA/SER.A/420). Vol. 12, Demographic Research. New York: United Nations; 2019. 197–236 p.

[2] Patole M. Localization of SDGs through disaggregation of KPIs. Economies. 2018;6(1).

[3] Elzen B, Geels FW, Green K. System innovation and the transition to sustainability: theory, evidence and policy. Edward Elgar Publishing; 2004.

[4] Wolfram M, Frantzesaki N, Maschmeyer S. Cities, systems and sustainability: status and perspectives of research on urban transformations. Curr Opin Environ Sustain. 2016;22:18–25.

[5] Berkes F, Colding J, Folke C. Navigating social-ecological systems: building resilience for complexity and change. Cambridge University Press; 2008.

[6] Wolfram M. Conceptualizing urban transformative capacity: A framework for research and policy. Cities. 2016;51(December 2015):121–30.

[7] Walker B, Salt D. Resilience Thinking: Sustaining ecosystems and people in a changing world. Washington: Island Press; 2006.

[8] Altsuler A, Behn RD. Innovation in American government: Challenges, opportunities, and dilemmas. Brookings Institution Press; 2010.

[9] George G. Handbook of Inclusive Innovation. Edward Elgar Publishing; 2019.

[10] van Winden W, Braun E, Otgaar A, Witte J-J. Urban Innovation Systems: What makes them tick? Urban Innov Syst. 2014;

[11] Fahmi FZ, Prawira MI, Hudalah D, Firman T. Leadership and collaborative planning: The case of Surakarta, Indonesia. Plan Theory. 2016;15(3):294–315.

[12] Miller TR, Levenda AM. The politics of urban sustainability transitions. Urban Sustainability Transitions. 2017. 346–355 p.

[13] Brouwer M. Governance and innovation: A historical view. Governance and Innovation: A Historical View. 2008. 1–245 p.

[14] Parimartha IG, Putera Agung AAG, Gede BI bagus. Sejarah kota denpasar 1945 - 1979. Departemen Pendidikan dan Kebudayaan, Direktorat Sejarah dan Nilai Tradisional; 1986. 144 p.

[15] Denpasar BPSK. Denpasar Dalam Angka 2014. Denpasar, Badan Pusat Statistik Kota; 2014.

[16] Denpasar BPSK. Denpasar Dalam Angka 2019. Denpasar, Badan Pusat Statistik Kota; 2019.

[17] Denpasar BPSK. Luas Lahan Menurut Penggunaan Kota Denpasar 2014. Denpasar, Badan Pusat Statistik Kota; 2015.

[18] Denpasar BPSK. Luas Lahan Menurut Penggunaan Kota Denpasar 2015. Denpasar, Badan Pusat Statistik Kota; 2016.

[19] Denpasar BPSK. Luas Lahan Menurut Penggunaan Kota Denpasar 2016. Vol. 3. Denpasar, Badan Pusat Statistik Kota; 2017. 54–67 p.

[20] Denpasar BPSK. Luas Lahan Menurut Penggunaan Kota Denpasar 2017. Denpasar, Badan Pusat Statistik Kota; 2018.

[21] Denpasar BPSK. Produk Domestik Regional Bruto Kota Denpasar Menurut Lapangan Usaha 2014-2018. Denpasar; 2019. 120 p.

[22] Denpasar BPSK. Produk Domestik Regional Bruto Kota Denpasar Menurut Pengeluaran 2010-2016. 2017.

[23] Wolfram M, Borgström S, Farrelly M. Urban transformative capacity: From concept to practice. Ambio. 2019;48(5):437–48.

[24] Walker B, Holling CS, Carpenter SR, Kinzig A. Resilience, adaptability and transformability in social–ecological systems. Ecol Soc. 2004;9(2).