Enhancement of Citizen Participation in Comprehensive Planning Processes through E-participation: A Case Study of Trondheim Kommune and Waling Municipality

Anil Nepal [a], Sanjay Uprety [b]

[a, b] *Department of Architecture, Pulchwok Campus, IOE , TU, Nepal*
Corresponding Email: [a] nepalanil10@gmail.com, [b] upretysanjaya@gmail.com

Abstract
This is a study to link the idea of citizen participation in the planning process with the concept of e-participation. The budget for fiscal year 2017 in Nepal aimed to develop Waling Municipality as a smart city. In this regard, this research tries to identify whether e-participation can be a suitable idea to impose on the local governments in Nepal for effective participation of citizens during comprehensive planning process. The study is based on a case study of two local governments; Waling Municipality in Nepal and Trondheim Kommune (Municipality) in Norway. In terms of methodology this study is purely qualitative which uses case studies, literature review and interview of municipal officials as major sources of data. Extensive literature review showed that citizen participation increases effective governance system. From the results major issues and challenges was identified in terms of citizen participation. Also, the contemporary tools which is used for citizen participation was identified as well as the e-participation tools which is being used by the global world. The output of the this study is to design a mainstreaming model for e-participation to enhance citizen participation for the preparation of comprehensive plans in municipalities of Nepal.

Keywords
Citizen Participation, E-participation, comprehensive planning, mainstreaming model

1. Introduction

Citizen Participation in any type of government is considered an important mechanism for achieving development gains, strengthening accountability and transparency of the government and most importantly empowering its citizens [1]. Kweit and Kweit (1981)argued that participation in government improved public service delivery and increased the trust of citizens in government. However, the outcomes of citizen participation depended on: (a) the characteristics of participation mechanisms; (b) the characteristics of the target organization, especially its capacity, structure, and commitment to the process; and (c) environmental characteristics, such as the size of the community, and the forms of government involved. Rodrigo and Amo (2006) on their Background Document on Public Consultations identify three main parts of public consultations which are notification, consultation and participation. Notification is the part where general public is given information on ongoing development works and plans

by the government. This helps citizens to be informed and more ready to put their views forth. Consultation is the part where ideas of people are taken into account in a structured way by the use of various procedure and tools. Participation is the part of decision making by the government taking into account the views of the citizens. E-participation is the use of technology enabled interconnection between government and its citizens where citizens feel the power to express themselves through electronic media maintaining check and balance. Sustainable Development Goal 10: Reduced Inequalities includes empowering and promoting the social, economic and political inclusion of all. It also targets to ensure equal opportunity and reduce inequalities of outcome. When the voices of citizens are heard to a certain depth such that all groups of people are included in the decision making, it creates balance in development works. SDG 16 (Peace Justice and Strong Institutions) targets to develop effective, accountable and transparent institutions at all levels. Ensuring accountability and transparency at

a local level requires citizens to trust their government and make their voices heard in terms of community and local level problems. In the context of Nepal, the rural integrity is one of the key values of the country where people in a community care about one another irrespective of gender, caste, ethnicity. The rural ways of farming, building of houses to resist all type of weather, use of water mills, use of solar powered lights etc. are some of the key sustainable characteristics which must be taken inspiration from while designing a better city to live. A city may face problems related to basic human needs such as the provision of affordable housing and utility infrastructure, conservation of tangible and intangible heritages, economic sustainability, environmental hazards and most importantly the issues of inclusiveness. These problems are only visible to a certain extent. Similarly, shared vision can only be visualized to a certain extent by the representatives of local bodies. Sooner or later citizen's voices must be taken into account if we want to create a sustainable community and eventually the smart city we are dreaming of. Citizen's perception on existing problems can be helpful to identify the smarter and easier ways to solve those problems. The solution of basic problems can then be a pathway to realization of shared vision of people to create a sustainable cities and communities with strong local institution.

2. Problem Statement

Although, it has been more than three years since the local elections in Nepal, municipalities and rural municipalities have not been able to meet people's expectations of an efficient governance system. There are difficulties in disseminating information from local government to its constituents i.e. the people, business, and other levels of government. There is a lack in both one-ways and two-way communication system between citizens and government during planning processes. Also, the major issues of basic development have not been heard which has caused dissatisfaction among people. The decisions being made by the local government in terms of planning process do not take inclusive voices of the people. In these more than three years, some biggest concerns have remained to be addressed, such as the efficacy of local autonomy, political disputes focused mainly on identity issues, the constructive function of other government and non-government entities and the democratization of bureaucratic boldness. This study

identifies the challenges of citizen participation in planning process and e-participation also focusing to suggest suitable mechanisms for participation with the use of technology.

3. Research Objectives

This study on enhancing citizen participation was based on answering some of the major questions and identifying a common solution for all municipalities by creating a bridge between design and policy intervention. The major research question of this study is to know what the major challenges of citizen participation are in local government of Nepal and how can e-participation help in enhancing citizen participation. The specific research objectives are:

- To identify the issues and challenges of citizen participation in planning process
- To identify the citizen participation models and tools being used at current; their usefulness and drawbacks
- To identify a suitable mainstreaming model of citizen participation in comprehensive planning process prevailing in Nepal for using e-participation tools and procedures to ensure effective citizen participation.
- To identify the effectiveness of e-participation tools.

4. Methodology

This work is based on a case study of two local governments; Waling Municipality in Nepal and Trondheim Kommune (Municipality) in Norway. In terms of methodology this study is exploratory in nature with qualitative data analysis which uses case studies, literature review and interview of municipal officials as major sources of data. This study falls under interpretative paradigm where reality is created by individuals in a group i.e., relativistic ontology.

Two different interview guides were formulated based on literature review and study area characteristics. Interview questionnaire formulated for Waling Municipality (Nepal) mainly focused on the challenges of citizen participation and use of technology for encouraging participation whereas Trondheim Kommune (Norway) saw questions related to the effectiveness of different technological tools and participation procedures being used. The study

was limited to four individual interviews from each municipality where, interviewees were mainly from planning and IT departments.
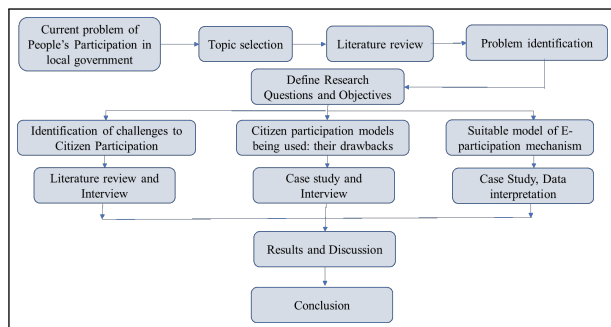

Figure 1: Methodology Flowchart

5. Literature Review

It has been proven that citizen participation increases effective governance. Kweit and Kweit (1981)argued that participation in government improved public service delivery and increased the trust of citizens in government. However, the outcomes of citizen participation depended on: (a) the characteristics of participation mechanisms; (b) the characteristics of the target organization, especially its capacity, structure, and commitment to the process; and (c) environmental characteristics, such as the size of the community, and the forms of government involved.

5.1 The transactive style of planning

Social learning is described as focusing on overcoming the contradictions between theory and practice, or knowing and acting (Friedmann, 1987). Its theory is derived from John Dewey and his scientific epistemology that emphasised "learning by doing" and that of Marxist philosophy and theory[2]. The underpinning philosophy of social learning is that "knowledge is derived from experience and validated in practice, and is integrally part of action". Knowledge therefore emerges from "an on-going dialectical process in which the main emphasis is on new practical undertakings; existing understanding (theory) is enriched with lessons drawn from experience, and the 'new' understanding is then applied in a continual process of change and action" [3]

5.2 Ladder of Citizen Participation

Arnstein (1969)gave theory on participatory planning where she describes about the various level of citizen participation. According to her, the idea of citizen participation is a little like eating spinach: no one is against it in principle because it is good for you. For illustrative purposes the eight types are arranged in a ladder patter with each rung corresponding to the extent of citizens' power in determining the end product.

The bottom rungs of the ladder are (1) Manipulation and (2) Therapy. These two rungs describe levels of "non-participation" that have been contrived by some to substitute for genuine participation. Their real objective is not to enable people to participate in planning or conducting programs, but to enable power holders to "educate" or "cure" the participants. Rungs 3 and 4 progress to levels of "tokenism" that allow the have nots to hear and to have a voice: (3) Informing and (4) Consolidation. When they are proffered by power holders as the total extent of participation, citizens may indeed hear and be heard. But under these conditions they lack the power to ensure that their views will be heeded by the powerful, when participation is restricted to these levels, there is no follow through, no "muscle," hence no assurance of changing the status quo. Rung (5) Placation, is simply a higher-level tokenism because the ground rules allow have-nots to advise, but retain for the power holders the continued right to decide. Further up the ladder are levels of citizen power with increasing degrees of decision-making clout. Citizen can enter into a (6) Partnership that enables them to negotiate and engage in trade-offs with traditional power holders. At the topmost rungs, (7) Delegated Power and (8) Citizen Control, have-not citizens obtain the majority of decision-making seats, or full managerial power.

Finally she advocates on the fact that community control supports separatism creating balkanization of public services; it is more costly and less efficient; it enables minority group "hustlers" to be just as opportunistic and disdainful of the have-nots as their white predecessors; it is incompatible with systems and professionalism; and ironically enough, it can turn Out to be a new Mickey Mouse game for the have-nots by allowing them to gain but not them sufficient dollar resources to succeed. These arguments are not to be taken lightly. But neither can we take lightly the arguments of embittered advocates

of community control-that every other of trying to end their victimization has failed!

Wirtz, Daiser, and Binkowska (2018) combined various literature to find out three categories of e-participation frameworks which are; application-oriented approach, system-oriented approach and evaluation-oriented approach. There are two application-oriented e-participation frameworks. Phang and Kankanhalli (2008) pursued an objective-driven approach. Their framework points out which participatory technique (e.g., public hearing, citizen panel, citizen survey) and corresponding ICT tools (e.g., web portal, online chat, online survey) are appropriate to achieve certain desired objectives of e-participation initiatives. The second application-oriented framework, which was proposed by Tambouris, Liotas, and Tarabanis (2007), investigates e-participation and its relation with traditional citizen participation. Their framework provides valuable insights for both relating participation areas with participatory techniques and the latter with ICT tools as well as examining the way emerging technologies can trigger new participation areas, democratic processes, and ICT tools.

From a system-oriented perspective, we identified three e-participation frameworks. Kersten (2003) presented a framework for system design, deployment, and use for participatory decision-making within an e-democracy environment. Furthermore, the author illustrates the implementation process of the framework as well as the experiences of diverse system usage experiments with large numbers of users. Kim (2008) elaborated a process scheme of public group decision making, which the author challenges against the experience of a participatory budgeting case in Brazil. He suggested that the perceived impact of the participation as well as effective communication tools and support are important factors to increase citizen participation. (Scherer & Wimmer, 2012) investigated the application of enterprise architectures frameworks (Zachman Framework and TOGAF) for e-participation. From the analysis they derive a five phase model for e-participation projects: (I) project initiation, (II) project design, (III) project implementation, (IV) participation, and (V) evaluation.

Concerning an evaluation-oriented approach, we found four e-participation-related frameworks that pursue an evaluation-oriented approach. E-participation can be seen through an analytical

framework for characterizing e-participation based on the OECD (2001) three stage classification of public participation which are information, consultation, and active participation. (Macintosh & Whyte, 2008) Her framework makes an important contribution since it constitutes not only one of the first e-participation frameworks, but in addition, helps to define emerging best practices. Another concept for assessing e-participation initiatives was elaborated by (Tambouris et al., 2007). They introduce a straightforward framework for assessing e-participation initiatives, which focuses on partial aspects of their previously introduced one (cf. Tambouris et al. 2007b). The evaluation is mainly based on investigating the participation area, the participation methods, and the ICT tools applied. Macintosh & Whyte (2008) introduced a framework for the assessment of e-participation projects, which aims at supporting local government in planning e-participation initiatives and improving the quality of their e-participation tools. Therefore, they suggest a systematic approach on a wide range of evaluation criteria. Loukis, Xenakis, and Charalabidis (2010) suggested a specific evaluation framework for e-participation pilots in the legislation process of parliaments, which is based on the existing concepts for the evaluation of information systems, e-participation, and traditional public participation. Their framework features three evaluation perspectives: evaluation of the used process, the applied ICT tools, and the political outcomes. Summarizing, the existing e-participation frameworks serve a specific purpose with a strong focus on tactical e-participation planning and implementation or assessing specific e-participation projects (Wirtz, Daiser, & Binkowska, 2018)

One of the latest models on technology acceptance, the Unified Theory of Acceptance and Use of Technology (UTAUT), synthesized elements across eight well known technology acceptance models: the Theory of Reasoned Action (TRA), the Technology Acceptance Model (TAM), the Motivational Model (MM), the Theory of Planned Behavior (TPB), the combined TAM and TPB, the Model of PC Utilization (MPTU), the Innovation Diffusion Theory (IDT) and the Social Cognitive Theory (SCT). The objective of the UTAUT was to achieve a unified view of user acceptance (Venkatesh et al., 2003). The resulting unified model consists of four core components or determinants of intention and usage i.e. Performance expectancy, effort expectancy, social influence and

facilitating conditions (Gupta, Dasgupta, & Gupta, 2008).The results show that UTAUT is a valid model to understand the adoption and successful use of ICT in government organizations in developing countries. Information systems analysts and designers should design ICT that are easy to use and directly impact individual and organizational performance. Government organizations also need to pay special attention to providing adequate training and support during implementation and use of such systems. Managers need to provide a facilitating environment where employees are encouraged to use new technologies by clarifying expectations and possible impact on employee job description and workload.

6. Case Area

Waling Municipality , is a small valley covered with hills formed on 27 January 1997 by merging of the then three VDCs namely Waling, Dhanubase and Pekhubaaghkhor. It is a town and municipality in the western hilly region of Nepal. It is in the Aadhikhola valley in Syangja District, Gandaki Zone of Nepal. Waling will be the first municipality to have houses all coloured with pink and will be named as Pink City. The total area of Waling municipality is 34.76 km2. According to the 2011 national census, the municipality population is 51,243 with 1.7 percent population growth rate. The literacy rate is 81.71 percent, however, the municipality have already been declared fully literate. Nepal Government has declared to envision this municipality as a smart city for fiscal year 2072/73.
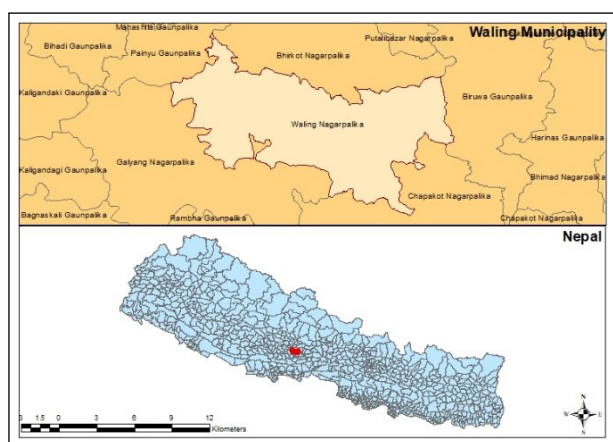

Figure 2: Waling Municipality

Waling Municipality is working on various sectors at present of which the smart governance project is a key

one. This municipality is planning to have digital service delivery due to which the study on e-participation can be a useful one.

Trondheim Kommune (Municipality) is a city and municipality in Trøndelag county, Norway. It has a population of 199,039 (27/02/2020), and is the third most populous municipality in Norway, although the fourth largest urban area. Trondheim lies on the south shore of Trondheim Fjord at the mouth of the River Nidelva. The municipality is governed by a municipal council of elected representatives, which in turn elect a mayor. On 1 January 2005, the city was reorganized from five boroughs into four, with each of these having separate social services offices. The current boroughs are Midtbyen (44,967 inhabitants), Østbyen (42,707 inhabitants), Lerkendal (46,603 inhabitants) and Heimdal (30,744) inhabitants. The Population statistics listed are as of 1 January 2008.
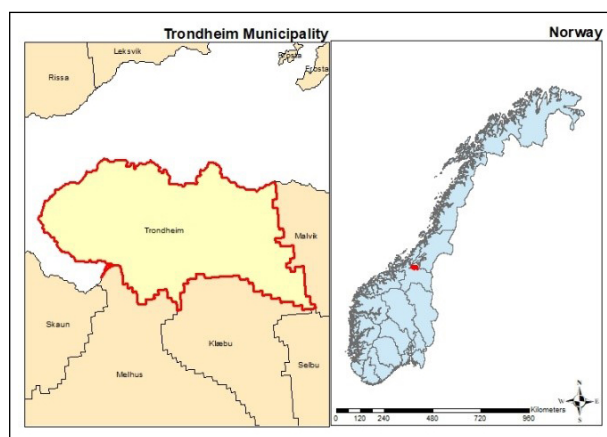

Figure 3: Trondhiem Kommune

This municipality is successful in delivering quality and efficient services to its citizens. The planning process is purely participatory. It uses technology as its main tool to engage citizens in planning process.

7. Result and Discussion

7.1 Challenges of Citizen Participation in Comprehensive Planning Process

This heading discusses on the on-site challenges faced by the municipality officials during the preparation of comprehensive plan in Waling Municipality. The basics of public participation could not be implemented efficiently. Public participation in simple terms means to involve those who are affected by a decision in the decision making process. It is

founded on the fundamental understanding that public participation can help make better decisions that reflect the interests and concerns of affected or interested people and entities. The concept of public participation is constructed of three pillar principles: the right to information, the right to participate in decision-making process and the right to justice. Effective participation is only possible if these three pillars are firmly in place:

- The Right to Information: - The public must have easy access to all the relevant information they require so that they may participate in meaningful way. This responsibility falls with the decision making authority. Information about public consultation was not disseminated to ward officials and stakeholders.
- The Right to Participate in Decision Making Processes: - Public participation is only possible if the appropriate mechanisms are in place to achieve this. The mere provision of information is insufficient in itself. The public must be informed at an early stage of their right to participate and the processes including the timeframe in which this is to occur. Since the information was not disseminated properly, there was minimal participation.
- The Right to Justice: - This principle provides that the public shall have a right of recourse to administrative or judicial procedures to dispute or discuss matters affecting them. This includes access to the appropriate courts of law or tribunals. Such a guarantee is important so those who are affected by a decision have a means of enforcing their rights. (The International Association for Public Participation, 2014)

The federal government of Nepal is established with the vision of establishing strong local governments. The Local Governance Operation Act 2017 has clearly mentioned the authorities, roles and responsibilities of local governments and their right to formulate local plan and policies. The interview with officials of Waling Municipality who were closely working with the consultant team responsible for formulation of Integrated Urban Development Plan which is comprehensive in its nature was helpful to this research in identifying the major challenges that was seen in citizen participation. The first major issue included participants' low level of representativeness.

Not even the focus group discussions saw considerable inclusive participation. Similarly, the low enthusiasm and incentive led the planning team to follow rational planning framework rather than transactive planning in many sectoral plan formulations.

Lack of essential civic knowledge, skills, and awareness among citizens, asymmetrical power sharing in communities are more reasons that citizen participation in planning process poses its own threat on the credibility of the formulated plan.

7.2 Prevailing Tools of Citizen Engagement

The current planning practice in Nepal follows use of bottom-up planning approach as it has been the case since the first five year national plan (1956-1961) was formulated during monarchy. 50 years later we are still practicing citizen engagement in planning.

(i) Focus Group Discussions : During the preparation of IUDP, focus group discussion (FGD) was done in municipality level as well as ward level. The key informant survey was followed by the PRA at the local level. The problems, potential, plans and projects were identified and those identified in the municipality level and through the key informant were verified in the local level. The vision of the integrated urban development was duly considered while performing the PRA. The resource mapping was done too.

(ii) Key Informant Survey :

The key informant identified through the correspondence with study area, reconnaissance survey and the workshop were surveyed for the problems, potential, plans and projects in the relevant sector. The information gathered through the key informant was used to support and verify the outcome of the workshop, and the already existing plans and programs. The key informants were approached much before the workshop and will be continued for gathering information to give final touch to IUDP report. The vision of the integrated Urban Development is duly considered while performing the key informant survey.

(iii) Stakeholder's Consultative Workshops :

The Integrated Urban Development is designed to be a hybrid process constituting both participatory as well

as data collection method. Participatory approach constitutes consultation from municipality level and verified from community and community level. Problems and potentials in the municipality level are collected through different level of consultation. These consultations are used for collecting data and information in local level too. In the case of Waling municipality, it is found that citizen engagement was widely used during the preparation of comprehensive plan for the municipality where focus group discussions (FGD) and ward level consultation were some of the tools used by the consultant team during plan preparation process. However, these meetings were just a part of taking the wish list of projects from people and completing the planning project with ease without taking into account the real problems of the people. There seems to be time constraints for officials to take up on the views of large number of people and only those problems are seen by the decision makers which the people near to them tell. Even though more than 80% of the people use mobile phones within the municipality the problems of digital divide and lack of e-readiness are predominant. Other similar problems were reported by the interviewees which is categorized as follows: political, administrative, policy, capacity, citizenry, geographical, social. The municipality, however, is trying to find solutions to keep citizens in the loop with the use of technology and formulation of projects related to smart governance.

Drawbacks of contemporary citizen engagement tools : Public participation can be time-consuming and sometimes expensive. To do it effectively, organizations have to build capacity and train staff. If done poorly, public participation processes can result in, for example, loss of faith in the agency. A negative experience of the process may lead participants to have negative perceptions of the outcome, and they may be less likely to participate in future processes.

Citizen empowerment is therefore a crucial component in improving participation. (Culver & Howe, 2004) argue that the restricted knowledge about policy of those who do participate, questions about whether the viewpoints of participants are representative of the population at large, and attendant skepticism on the part of policymakers about the value of the information generated from participants. There important questions about how and when – and indeed whether – public consultations can be used to positive effect. The authors conclude that an

important measure of success for public consultations is the degree of congruence between the actions and expectations of citizens and officials

7.3 Findings from Case Study (Trondheim Municipality)

On January 20, 2020 Trondheim Municipality in collaboration with 3C project (Co-Constructing Cities) published a report on the case study of 'Framtidsbilder Trondheim Sentrum 2050'. The main aims of the research project was to present the project case study and communicate the lessons learned from working with stakeholders in research projects. This can contribute to the ongoing focus and knowledge field concerning working in the intersection between academia and practice. The report can be useful for both research projects looking to collaborate with public stakeholders, and for public stakeholders looking to collaborate with research projects.
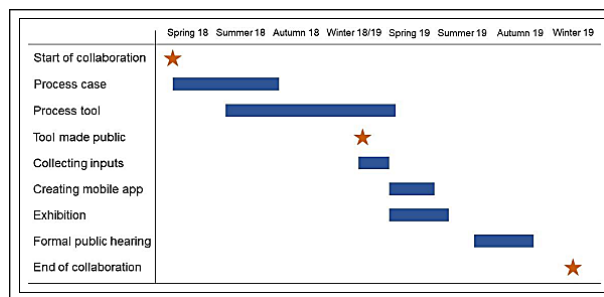

Figure 4: Timeline for Public Consultation

Home based "charettes" as the arena for participation :

Earlier in their strategic work, Trondheim municipality had asked for volunteers among the public to be hosts for planning "charettes" in their homes (in Norwegian called "gjestebud"). This participation method entails a host inviting friends, family and/or neighbours to their home for a meeting on a specific plan or questions related to urban planning

Figure 4: Facebook post from the municipality inviting people to host home based "charettes".

Figure 5: Timeline for Public Consultation

By the time the collaboration with 3C kicked off, the planning office had already initiated a round of charettes and received the results in written format from the participants. The approach of home based charettes was already an established method in the municipality. It focused on discussion in a group setting, therefore lowering the barrier of participation compared to larger public meetings ("folkemøte"). These aspects made the charette a suited arena for 3C to test a tool for a more holistic and challenging task concerning urban planning. The planning office therefore announced another round of charettes and asked for new volunteer hosts in the context of "Framtidsbilder"

The digital platform :

The method of participation 3C created for the charettes consisted of a digital platform with three parts: an introduction of the context and task, a timeline of the planning process in question, and the tool for creating and adding inputs. The "context and task"-page was made for participants to understand

what they were invited into, and what was expected of them in the process. The intention behind this was to reduce the amount of information people needed in order to understand what was at stake, how to contribute in the process, and to limit the sources for this information. The goal was to have all necessary information in one single platform. The timeline allowed participants to understand where they were in the process, what had already been decided, and what was to come next. In other words: what was at stake at that point in time, and how they could contribute and affect this. The timeline consisted of short explanations of past and future decisions and processes, with links to political decisions, other strategies and web pages. This was to make it easy to get an overview of the process, as well as making it possible to dig deeper into the material if needed. The tool for creating and sending inputs was built around photos, visualisations, and maps, but also had text – in order to broaden the possibility of inputs by depicting concrete ideas and built features in the urban environment, or simply showing existing examples from other places. Participants could also choose general images of plants, animals, people, cities and so on, from suggested open-source image databases, to represent a feeling or idea. This was to overcome the barrier of professional language, as well as giving the planners a quicker intuition of what the inputs would contain.

Figure 6: Website for Citizen Engagement in City Builder Project

The results from the competition were displayed in both a physical exhibition in the library, as well as digitally on Trondheim's project website: framtidstrondheim.no. For the physical exhibition, all the teams (including 3C) had to create posters. In addition to posters, 3C created a simple video looping the inputs that were received, both in text and pictures, on a screen next to the posters.

7.4 Discussions on the findings

There are different tools used by the Trondheim Kommune to ensure citizen participation. One of the major citizen engagement tools used by most of the departments are the use of websites for two-way communication which seems to have a pretty good response. Similarly, other tools used are community mapping tools, community meetings on specific agendas provided through Facebook or mail by officials of the Kommune, use of media resources to share information to general public. All the interviewees report that use of ample resources such as the use of media, websites, social media groups, physical consultation from time to time and use of community libraries to conduct meetings are some of the things that has helped ensure public participation within the municipality. They believed that this created a sense of trust between citizens and government. Pandeya (2015) categorized the key constraints on effective citizen participation for local governments od Nepal which concurs with our results where the major challenges of citizen participation could be incorporated into these categories.

Most of these common issues pointed out by Pandeya (2015) need a great degree of policy changes, increase in capacity of the local government and decrease in social issues which can only occur with time. However, e-participation framework and tools can be developed to tackle certain problems at this time. the foremost thing to do would be to give roles and responsibilities to institutional part to help increase citizen participation and ensure that the problems, ideas and vision of the people are incorporated into planning and development projects of the municipality. Different sectoral departments can have different roles in terms of information flow, public consultation and decision making. Creating awareness and sharing of information can be done through social media (Facebook and YouTube), advertisement boards, websites, radio, TV and SMS. Then the ideas of people can be taken through different mediums; physical consultations being the most reliable one. However, group meetings can be held among people, using Facebook messenger to create groups can also be a solution to different levels of problems.

E-Participation Model for Comprehensive Planning in Nepal :

Output of the Plan	Activities Involved	Mainstreaming E-participation tools
Municipal Profile	Collection of Data through HH survey and site visit	Use of electronic mediums for Data Collection in the first phase. Use of online medium of data collection such as digitization mobile application in the next phase
Municipal Vision Formulation	Identification of Lead Sector Bottom Up Vision Formulation through Ward Level Consultations	Use of E-Voting on prioritized sectors. Use of virtual meetings such as **Zoom Meetings, Messenger meetings etc.** with stakeholders for identification of lead sectors
Identification of Sectoral Goals, Objectives, Strategies and Programs	Rational Planning process Ward and Municipal Level workshops	Use of virtual meetings such as **Zoom Meetings, Messenger meetings etc.** with stakeholders for identification of lead sectors
Physical Development Plan	Preparation of Land Use Plan Road and Transportation Water supply and sanitation Drainage Electricity and Communication	Use of GIS based data of land resources using smart tools. Retrieving real-time traffic data for action-oriented decision making. Use of smart tools to retrieve comprehensive data for proper planning
Social Development Plan	Identification of Social Problems underlying in the society according to socio-economic and demographic data	Complaint Registration portal for women and child related issues. Integrating portal dedicated to store data and progress of ongoing Government, NGO and INGO projects for social development.
Environment Management Plan	Identifying Environment Sensitive Zones, Forest areas and water bodies. Proposing suitable mechanisms for protection of these resources.	Management Information System and Project Information System for digitizing forest area with the help of local stakeholders. Creating digital platform for user's group meeting and information sharing
Disaster Risk Management Plan	Creation of disaster management plan for earthquake, landslide and soil erosion, flood, fire and industrial hazards. Preparing Risk Sensitive Land Use plan	Creating disaster related library to record victim and loss of property information. Identification of disaster prone areas and proposing mitigating measures through online portal of concerned authority
Multi-Sectoral Investment Plan	Identifying sectoral programs and projects, prioritizing and allocating funds for those projects.	Organizing online voting and consultation for locals to prioritize projects and allocating funds

Figure 7: Mainstreaming Model for E-Participation in Comprehensive Planning

8. Conclusion and Recommendations

Considering the literatures on citizen engagement, e-participation and comprehensive planning in Nepal, it is seen that there is minimal interaction of local stakeholders with the government and plan formulation committee. Lack of reflecting data also makes it harder for decision makers to act on the related sector. So the officials suggested that different types of mobile application, e-participation tools, use of broadcast media, use of social media(Facebook, Twitter, YouTube etc) can be helpful in disseminating and retrieving information to and from local stakeholders.

This research can be a foundation to identify the acceptance of this technology by the citizens. Acceptance is the key for success of these technologies to be used. Similarly, the success also falls under whether or not we, as a citizens are able to cope up with digital technology. Relationship between digital literacy and citizen e-participation tools can also be studied further. In the context of Nepal, only few urban areas can be used to implement this model during comprehensive planning. Sustainability of these models can also be related to SDG goals and indicators to realize where Nepal is leading in the

Global World.

References

[1] Ganesh Prasad Pandeya. Does citizen participation in local government decision-making contribute to strengthening local planning and accountability systems? an empirical assessment of stakeholders'perceptions in nepal. *International Public Management Review*, 16(1), 2015.

[2] John Friedmann. The transactive style of planning. *Insurgencies. Essays in Planning Theory*, 1973.

[3] John Friedmann. *Insurgencies: Essays in planning theory*. Routledge, 2011.