# Institutional Analysis and Development Approach

Subjects: Environmental Studies

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Institutional Analysis and Development (IAD) is a framework used widely by social scientists to study the effects of institutional arrangements as institutions emerge and change over time. Such a framework would be useful for explaining individuals' operational choices in various collective action settings, including waste recycling.

household food waste | Institutional Analysis and Development framework | waste charging policy

## 1. Introduction

Institutional Analysis and Development (IAD) is a framework used widely by social scientists to study the effects of institutional arrangements as institutions emerge and change over time [1]. Studying how institutional arrangements affect human behaviour patterns is both a complex and daunting task [2][3], even more so if there are no *crutches* that aid the analytical process in sifting through the different intermingling variables that translate the rules to the stable behaviour of a group of people. One of these “crutches” could be the meta-theoretic framework called IAD [4]. The IAD framework involves analysing actors, norms, institutional settings, incentive structures, and rules, among others. It aids the analysts in examining complex collective action problems by logically dividing them into “action arenas” or “action situations”, that are smaller—but more practical and understandable—pieces of the whole problem. The IAD framework has been found useful for a complex network of factors and situations that needs to be considered to answer a question [5]. The IAD is also expedient because it presents six common criteria [6][7] to evaluate whether an institutional outcome—such as that from a policy—is satisfactory or not. Specifically, in this article, we would like to apply this promising framework to systematically identify and evaluate possible outcome options of household food waste reduction/recycling brought about by an upcoming waste charging policy. From what we have known so far from the current government’s waste statistics and scholarly literature, the review will gather relevant data to inform the IAD framework.

In 2020, food waste in Hong Kong amounted to 3255 tonnes per day, accounting for 30% of the daily municipal solid waste (MSW) dumped in the city’s landfill [8]. The city’s annual per capita food waste then is about 120 kg [8]. **Figure 1** shows how this value is high compared to many places around the world. By aiming to discourage MSW generation and encourage waste recycling, the upcoming waste charging scheme in 2023 would be expected to affect food waste disposal practices in the city. However, it begs the question of how the policy would really give enough incentive to reduce food waste either through source reduction or recycling. Outside the possibility of illegal dumping, would the new policy induce collective action among households to send food waste off for recycling rather

than just including the food waste in the official garbage bag or illegally disposing of it? If more food waste recycling does happen, would the demand-end of the food waste recycling process be sustainable enough [9][10][11]?

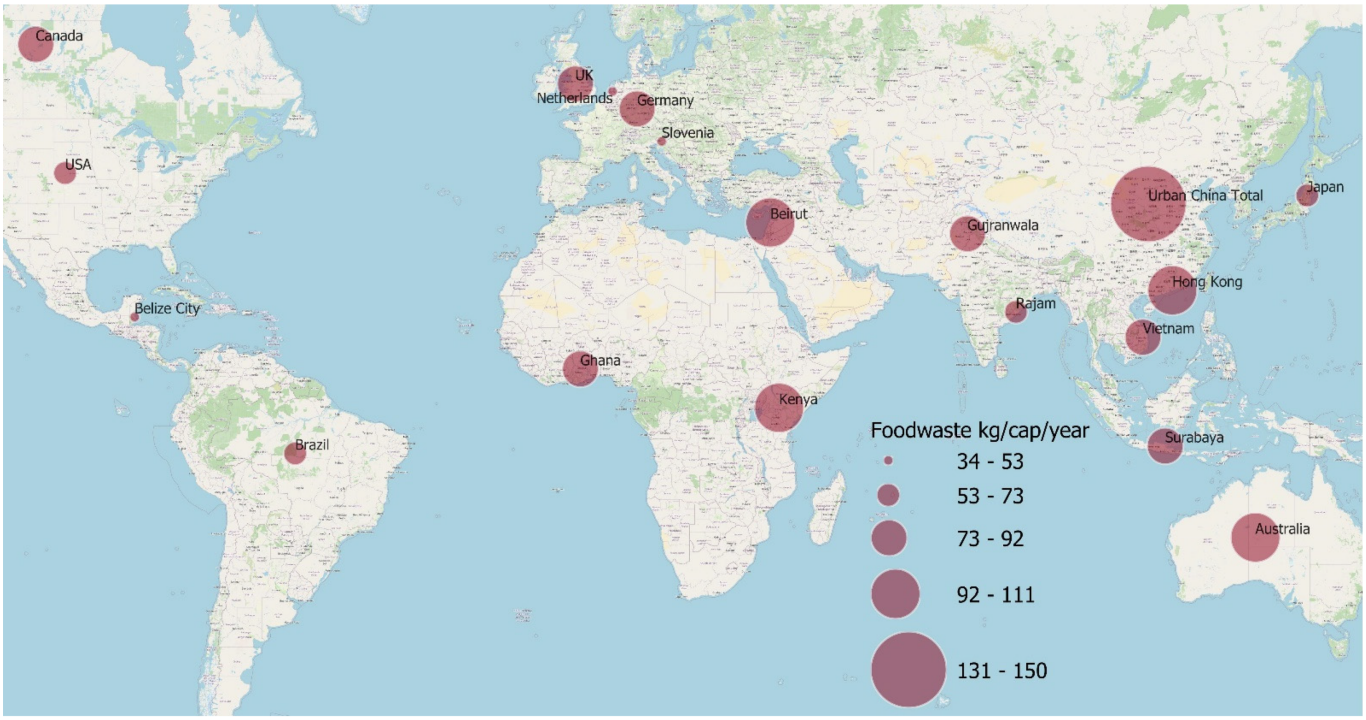


**Figure 1.** Annual food waste per capita of some selected places around the world (data from www.unep.org/resources/report/unep-food-waste-index-report-2021, accessed on 23 November 2022).

## 2. Defining IAD Action Situation and Variables

This section is intended to delineate the action situation to which the IAD framework is applied. It lays down some basic information to delimit the scope of analysis that is conducted in the succeeding sections of the article. We begin with the policy aims and expected outcomes.

The policy situation here revolves around the new waste charging policy which was institutionalized via the Waste Disposal (Charging for Municipal Solid Waste) (Amendment) Bill 2018. This policy aims to encourage waste reduction at source or more recycling in order to reduce landfill input when it starts in 2023 [12]. For the household, this scheme is expected to affect how people handle their waste and other types of recyclables, such as plastic, paper, and polystyrene. Clearly, this policy will influence how household food waste is managed. As food is essential for human sustenance, the authors deemed it worthwhile to study the policy's outcomes on food waste. Additionally, in order to fit such a complex issue into a few pages, this analysis limits the scope to only food waste from households and excludes waste coming from commercial (e.g., restaurants, markets) and industrial establishments. Although this issue involves more interconnected stakeholders aside from households and the government, the relation to other stakeholders is tangential to the discussion in this article.

Furthermore, it is worth noting that household food waste has a huge impact on the city, accounting for a third of MSW thrown away every day [8]. Moreover, the sources of household pre/post-consumption food waste are also spatially dispersed, which further compounds the problem and its significance. The option of illegal dumping is unfortunately also looming on the horizon [13], with the waste, one way or another, ending up in landfill. By taking these into consideration, the study emphasises the operational choice of the household in disposing of food waste in the new policy context.

The following subsections discuss the components of an action situation [14], followed by an explanation of the external variables that influence the action situation.

## 2.1. Components of the Action Situation

In an action situation, certain outcomes are produced when different actors—given their position—choose certain actions based on the information about and control over their decision making with respect to the resource in question and its net cost or benefit. These different components are found inside the box in **Figure 2**.

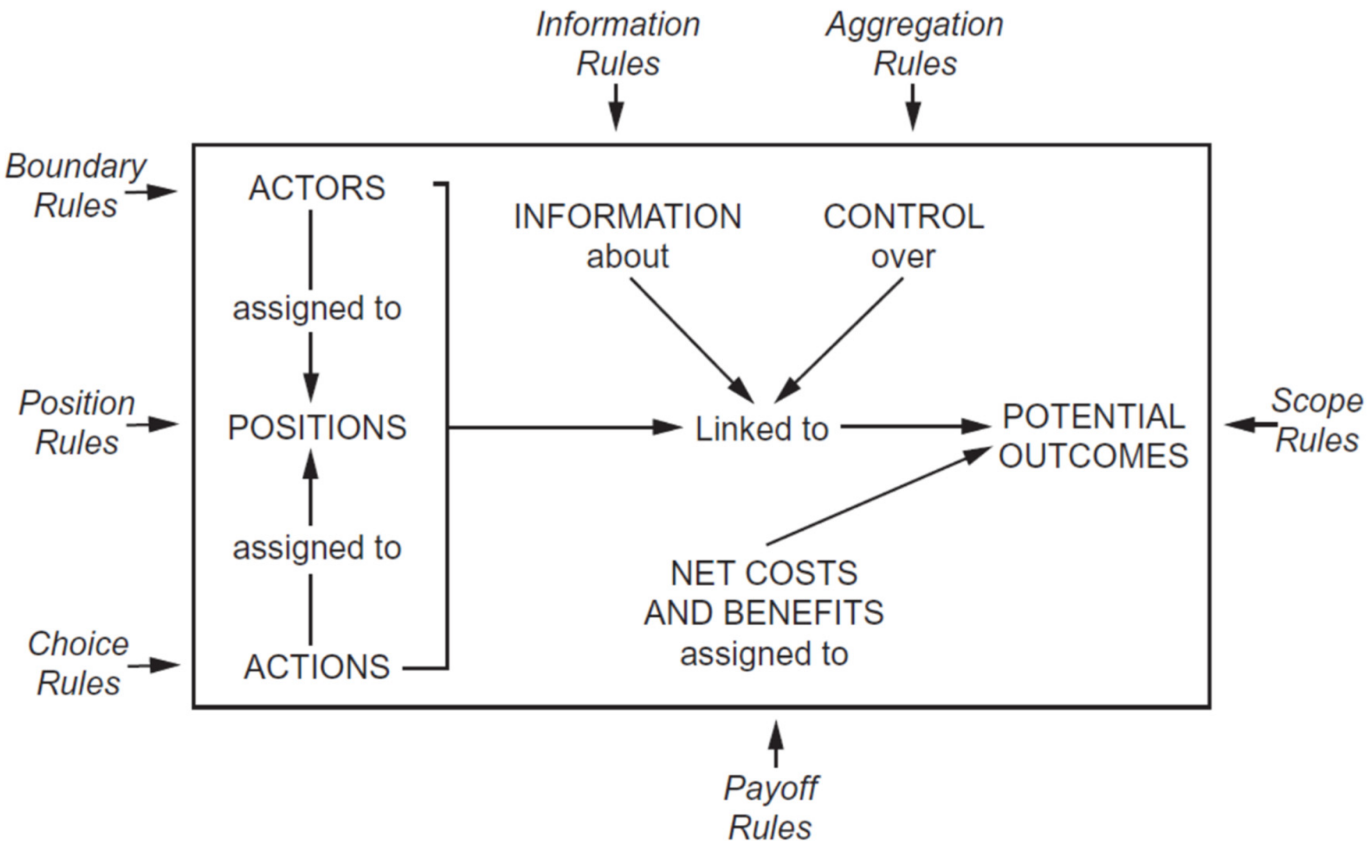


**Figure 2.** Rules as exogenous variables directly affecting the elements of an action situation (reprinted with permission from Ref. [14]. 2005, Princeton University Press, p. 189).

The main actors in this particular action situation are the households, as they interact with the government and food waste collectors/processors—possibly through estate managers—to determine how to best handle food waste. Having considered the external variables, **Table 1** shows the relevant characteristics of the actors in the action

situation that influence their decisions based on Polski and Ostrom's work [5]. In the context of legislating the waste charging scheme, the households are on the receiving end. Only the government has the political and economic capacity to change, monitor, and implement the de jure policies. Nevertheless, households are very numerous and dispersed for the government to have full monitoring capabilities; if fully executed, increasing the "policing cost" [15] substantially. As an intermediary, the government may channel its efforts through estate managers to facilitate collecting the food waste from each household, and they may act as an intermediate monitoring arm of the government. They also have the option to set up estate-based food waste processing.

**Table 1.** Characteristics of different actors in the action situation.

| | Household | Government | Recycler | Estate Managers |
|---|---|---|---|---|
| Resource | Producer of food waste stock | Has power and monetary resource | Has technology; Has specialised know-how; Has a connection to recycling market | Control over cleaning/collection facility |
| Valuation | Savings; Sanitation at home; Want a better environment | Sustainability in waste disposal | Constant stock; Better environment; Profit or financial sustainability | Sanitation of estate |
| Information processing (in recycling food waste) | How can I process food waste myself? Where can I send it to be processed? How much time/money will it cost me? | Has all statistical information about waste/waste management | Looking for quality/stable food waste stock; Looking for end product users | Professionally trained managers have an advantage |
| Selection process | Should I process it myself or outsource? Should I include it in the bag or throw it away illegally? | Social good | Does it make business sense to obtain from household rather than commercial/industrial establishments? | |

Unavoidably, households and the government may have to link up with recycling specialists. These recycling operators have control and access to knowledge and manpower to carry out the technical aspect of food waste recycling. If the policy aims to encourage food waste recycling as a means of waste reduction, this actor is also crucial. These specialists also have the business network to sell and dispose of the end products of the recycling process. Some specialists are directly under the government, such as O·Park and Food Waste Pre-treatment Facilities. The government also funds projects that can help address the waste charging issues [16].

## 2.2. Biophysical Conditions: Economic Nature of Food Waste

With its high-rise multi-storey residential buildings, Hong Kong had more than 6810 people living in each square kilometre in 2021 [17]. This high-rise configuration provides very little private and public collaborative space to store and process food waste [18]. This very dense city produces 3255 tonnes of food waste, where 2477 is domestic food waste, while the other 778 tonnes are from commercial and industrial sources [8]. As a result, the Hong Kong government is estimated to have spent HKD 4.9 B (USD 700 M) on its waste programme in 2021 [19]. Currently, there are three landfills in Hong Kong; thirteen refuse transfer stations; and three primary recycling stations for food waste, namely O·Park 1 and a second one coming in 2023, and Food Waste Pre-Treatment Facilities [8]. With respect to non-consumable food waste, there was a plan to use the existing sewerage system of the city to process industrial food waste [20].

In our analysis, we look at the nature of food waste as two goods with positive value: food waste as recyclable and food waste disposable service. Food waste may be considered a resource by recyclers and collectors. Similarly, the household may consider food waste positively as a possible recyclable material (e.g., gardening or home agricultural projects). On the other hand, households may most likely see its negative value in terms of personal liability within the context of the waste charging scheme and home sanitation. In this case, the household turns its attention to food waste disposal services as goods. These services include both collection and processing. Similarly, the government may also see it with a dual perspective: negative in terms of waste, but to a smaller degree, positive due to its recycling and energy recovery potential.

Let us take a look at the food waste disposal service as the goods in question. Currently, prior to the bill, there was no metered fee for municipal solid waste disposal [21]. In general, the waste disposal service for households could fall into a public good category with low subtractability and excludability (**Table 2**). It is very difficult to exclude anyone from using the service, which may result in some form of freeriding. For instance, in Hong Kong's dense multi-storey configuration, refuse collectors collect the garbage put out in the communal corridor or staircase, and it is very costly for the collectors to differentiate who has paid for the service or not. Moreover, households could also dispose of their garbage in the garbage bins on the public streets for free. The waste disposal service also has low subtractability because one user does not "lessen" the space that can be used by another, at least not until the landfill is nearly full [22]. **Table 2** illustrates that the waste charging scheme shifts the disposal service from a public good type to a good with a slightly higher excludability or toll good. This form of toll system allows each resident to shoulder their respective waste disposal expenses, which are dictated by their own waste management behaviour. The latter is something the residents have more control over, and that is not compounded by other people's behaviour.

**Table 2.** Nature of refuse collection and disposal service in Hong Kong [5].

| | High Excludability | | Low Excludability |
|---|---|---|---|
| High subtractability | Private | | Common Pool |
| Low subtractability | **Toll** | ← | **Public refuse collection system** |

Aside from the food that can still be consumed by other human beings, food waste can be used as animal feeds, soil supplements, and biofuel, to name just a few uses (**Table 3**). Some known technologies for recycling food waste into biofuel are already available [23][24]; some bio-processors can reduce up to 80% of the mass of waste [24]. Not

needing to be the main substrate, certain glycerin-rich food wastes may also be used as an additive to increase the efficiency of biogas formation [25]. There is also a proposal to use food waste disposers to grind food waste into the sewerage pipes and transport it to sewage treatment plants for processing into possible biofuel [26][27]. The government also plans a long-term collection system, but the details are yet to come [28].

**Table 3.** End uses of food waste (compiled from various works [27][29][30][31]).

| | Processing Needed | Processing Cost | Collection | Output Characteristics |
|---|---|---|---|---|
| Composting | Medium processing | Minimal, space constraint | - | Very little end demand in HK |
| Animal feed | Minimal processing, but quality not stable | Minimal | For pets: minimal, For frame animals: significant | Very little end demand in HK |
| Biofuel | Needs bio processing | High initial capital cost | Significant | Possible for HK |
| Wastewater | Disposer grinds, Dilution needed | Invest in disposer; Adjust waste water facility capacities | Utilise existing waste water pipes | Possible energy generation but still more energy consumption |

## 2.3. Community Attributes

Contextual factors of different places were found to significantly affect food waste behaviours [32]. This is why we have to look at the attributes of the city. Hong Kong has a GDP per capita of HKD 387,110, even amid the pandemic in 2021 [33], which is still within the world's top 20. The median monthly household income straddled around HKD 27,000 to HKD 29,000 in 2021/22 [34]. A typical household consists of 2.8 people [35], with each person estimated to produce 0.9 kg/day [8]. This amount is far less than the 1.27 kg/person/day in 2011 [36], which shows, among other things, an improved awareness on the part of citizens. An average household in Hong Kong spends 26.8% on food monthly, 62% of which is meals out or take out [37]. This translates into the amount of post-consumption food waste, food packaging, or unconsumed stored food [38]. Considered a world-class financial hub, the city's pace of life is one of the world's fastest, so would a slow process such as recycling and bioprocessing be attuned to the current way of life in the city? A study showed that the modern city lifestyle has some implications for food waste behaviours [39].

We now look at the perception of Hong Kong residents about food waste recycling. Attitude and perceived behavioural control toward food waste affect intentions to reduce or send them for recycling [40][41][42]. In the 2021 Population Census, 81.6% of the Hong Kong population aged 15 and over had attained at least secondary education, with 34.6% achieving post-secondary education. Environmental awareness is very much part of the educational content promoted in the city [36]. For instance, a pilot educational programme for food waste recycling in 2011 was found effective in reducing the food waste generation of the participating residents in the 11 sample estates [43]. In a survey of 192 Hong Kong residents, 39% percent say they carry out recycling activities once or twice a week of mostly paper/plastic/metal, while 10% never recycle at all [44]. With respect to food waste, this same sample does not recycle food waste, and only 37% have heard of any food collection scheme in the city [44].

Historically, health issues such as Severe Acute Respiratory Syndrome (SARS) in 2003 increased the awareness of the residents about sanitation [18]. The recent pandemic is expected to have had a similar effect on the resident, but to what degree is yet to be determined. Positive food waste management was observed in Japan during the pandemic [45]. In a recent Canadian example, the total food waste generated did not change much during the pandemic; however, the unavoidable portion, such as inedible peel or bones, increased substantially [46].

What values do contemporary residents have about saving food? What is the perception of food waste? Since 2013, the per capita food waste disposed of each day dropped by 17% in 2019 to 0.3 kg [36]. In a survey of 603 Hong Kong local respondents, 40% do not actively participate in any food waste source reduction activity, while 37% say they do [29]. In the same study, 66% agree that there should be a mandatory food waste reduction scheme, and over 90% of the sample find wasting food objectionable.

In considering the perception of households towards illegal dumping, Chu [13] found that respondents justify illegal dumping (when the waste charging scheme is implemented) by blaming the newness/ambiguity of the law, that no one is harmed, and when there is a real necessity. The study also found that women were less likely to intend to dump illegally [13]. By using a response distortion mitigation technique, another study of 223 respondents found that there is generally less tendency of people in Hong Kong to intend to dump illegally [47]. It may be interesting to survey if people think the government can monitor and catch them if they illegally dump waste.

## 2.4. Rules-in-Use

Rules affect how the interactions in the action situation play out. IAD helps to break down the rules into different dimensions. This section begins by explaining the details of the official policy, and it then proceeds to briefly discuss how its implementation affects the different dimensions of the rules-in-use in the action situation [4][5].

In 2014, the Environmental Protection Department implemented a pilot scheme on MSW charging in seven housing estates in the city. This pilot scheme aimed to try out various MSW charging options, such as weight-based vs. volume-based charging and building-based charging vs. household-based charging. Eventually, the government of the Hong Kong Special Administrative Region selected the option “volume-based by households”. In 2023, it will implement a waste charging scheme wherein only municipal waste disposed of using specific bags would be collected and deposited into the landfill through the government or private waste collector [12]. These bags will range from 3 L to 100 L, costing 0.11 Hong Kong Dollars (HKD, roughly USD 0.07) per L. For oversized items such as furniture, special tags could be purchased at HKD 11 per piece [12]. Any waste disposed of outside the scope of the abovementioned bag and tag will be deemed to be illegally dumped. One desired course of action is for people to recycle some of the waste to reduce the cost of paying for the official bag or tag. This formal policy manifest in the different dimensions of the rules-in-use. These rules-in-use are enumerated below:

Position rules specify the role of participants, such as that of the household, government, and estate managers. Boundary rules indicate how you become part of this action situation, such as how one is covered by this policy. Authority rules specify what actions the participant, such as the household or government, could take. Aggregation rules speak about how much control the households or government have over their actions. Information rules are

about how accessible the information is to help actors decide what actions to take. Payoff rules indicate the cost and benefits of the actions chosen, whether to reduce, recycle or dispose of food waste. Scope rules show the possible outcomes, such as how food waste reduction/recycling increases and less waste is dumped into landfill.

### 2.5. Network of Adjacent Action Situation

Although this study focuses on households' food waste, other types of waste and other stakeholders also influence the household's behavioural choices. The external variables affecting our focal action situation may also come from related action situations. Some of these action situations produce rules that influence how the elements interact in the focal situation. The following paragraphs provide some examples of relevant action situations. McGinnis [48] mentioned the significance of the network of adjacent action situations in the IAD analysis. For our purposes, we briefly discuss these adjacent action situations but leave a deeper discussion of them for another article.

For instance, commercial food establishments can "compete" for the household. Recyclers have a limit on the maximum amount of food waste they can process. As of now, O·Park collects its food waste from restaurants, food processors, and other big organisations [49][50]. Commercial and industrial food establishments have the advantage of more volume per source, which makes it more economical to collect and send this waste to the processing facility. For instance, this action situation may affect the aggregate rules of the focal action situation.

As the export of food waste for processing is not as feasible [36], local consumption of food waste products is more desired. Hong Kong has very little agricultural industry left. Raising pigs and livestock in most places in Hong Kong was banned in the 1990s (see the Waste Disposal Ordinance of the Laws of Hong Kong, Cap. 354). Nevertheless, there is still a possible local demand for food waste compost by-products. Other markets for food waste processing by-products include fish feed and animal feed. However, maintaining the stability of quality and quantity is a perennial concern [10]. The large area of the country park where vegetation is still present may be an option to explore.

In converting food waste into biofuel either from food waste directly [11] or in the sewerage system [27][50], the action situation of how the end product demand could be sustained is a relevant aspect to consider. The biofuel market can be relevant to the food waste issue because the end product of the recycling process could eventually be bought or used here. The price and usage rate of these biofuel products can dictate how feasible it is to install more bio-processors for food waste [31]. It may even dictate the quality requirements of food waste acceptable for processing [11]. This may affect the scope and payoff rules of the focal action situation.

## References

1. Cole, D.; Epstein, G.; McGinnis, M. The Utility of Combining the IAD and SES Frameworks. Int. J. Commons 2019, 13, 244–275.
2. Kiser, L.; Ostrom, E.O.E. The three worlds of action: A metatheoretical synthesis of institutional approaches in strategies of political inquiry. In Strategies of Political Inquiry; Ostrom, E., Ed.; Sage:

Beverly Hills, CA, USA, 1982; pp. 179–222.

3. Ostrom, E. Analyzing Collective Action. Agric. Econ. 2010, 41, 155–166.
4. Ostrom, E. Background on the Institutional Analysis and Development Framework. Policy Stud. J. 2011, 39, 7–27.
5. Polski, M.M.; Ostrom, E. An Institutional Framework for Policy Analysis and Design. In Elinor Ostrom and the Bloomington School of Political Economy Volume 3, a Framework for Policy Analysis; Cole, D.H., McGinnis, M.D., Eds.; Rowman & Littlefield Publishers, Inc.: Lanham, MA, USA, 1999; pp. 13–47.
6. McGinnis, M.D. An Introduction to IAD and the Language of the Ostrom Workshop: A Simple Guide to a Complex Framework. Policy Stud. J. 2011, 39, 169–183.
7. Ostrom, E. Zooming in and Linking Action Situation. In Understanding Institutional Diversity; Princeton University Press: Princeton, NJ, USA, 2005; pp. 32–68.
8. Hong Kong Environmental Protection Department. Monitoring of Solid Waste in Hong Kong. Available online: https://www.wastereduction.gov.hk/sites/default/files/msw2020.pdf (accessed on 26 August 2022).
9. Ng, B.J.H.; Mao, Y.; Chen, C.-L.; Rajagopal, R.; Wang, J.-Y. Municipal Food Waste Management in Singapore: Practices, Challenges and Recommendations. J. Mater. Cycles Waste Manag. 2017, 19, 560–569.
10. Ho, K.S.; Chu, L.M. Characterization of Food Waste from Different Sources in Hong Kong. J. Air Waste Manag. Assoc. 2019, 69, 277–288.
11. Yeo, J.; Oh, J.; Cheung, H.H.L.; Lee, P.K.H.; An, A.K. Smart Food Waste Recycling Bin (S-FRB) to Turn Food Waste into Green Energy Resources. J. Environ. Manag. 2019, 234, 290–296.
12. GovHK. Municipal Solid Waste Charging. April 2022. Available online: https://www.gov.hk/en/residents/environment/waste/management/mswcharging.htm (accessed on 16 March 2022).
13. Chu, A.M.Y. Illegal Waste Dumping under a Municipal Solid Waste Charging Scheme: Application of the Neutralization Theory. Sustainability 2021, 13, 9279.
14. Ostrom, E.; Crawford, S. Classifying Rules. In Understanding Institutional Diversity; Ostrom, E., Ed.; Princeton University Press: Princeton, NJ, USA, 2005; pp. 186–215.
15. Demsetz, H. Toward a Theory of Property Rights. Am. Econ. Rev. 1967, 57, 347–359.
16. Environment and Conservation Fund. Approved Projects: Waste Separation Projects to Pave the Path for Municipal Solid Waste Charging. Available online: https://www.ecf.gov.hk/en/approved/msw_index.html (accessed on 19 October 2022).

17. Census and Statistics Department. 2022 Land Area, Mid-Year Population and Population Density by District Council District. 2021. Available online: https://www.censtatd.gov.hk/en/EIndexbySubject.html?pcode=B1130301&scode=150 (accessed on 11 April 2022).
18. Xiao, J.X.; Siu, K.W.M. Challenges in Food Waste Recycling in High-Rise Buildings and Public Design for Sustainability: A Case in Hong Kong. Resour. Conserv. Recycl. 2018, 131, 172–180.
19. Hong Kong SAR Government. Budget: Environment Protection Department. 2022. Available online: https://www.budget.gov.hk/2022/eng/pdf/head044.pdf (accessed on 21 April 2022).
20. Hong Kong Environmental Protection Department. Problem & Solution. 2022. Available online: https://www.epd.gov.hk/epd/english/environmentinhk/waste/prob_solutions/codigestion_trial_scheme.html (accessed on 19 October 2022).
21. Hong Kong Environmental Protection Department. Public Consultation—Archive. Available online: http://www.epd.gov.hk/epd/msw_consult/english.html (accessed on 19 October 2022).
22. Buchanan, J.M. Public goods and public bads. In Financing the Metropolis; Sage Publications: Beverly Hills, CA, USA, 1970; pp. 51–71.
23. Lam, C.M.; Iris, K.M.; Medel, F.; Tsang, D.C.W.; Hsu, S.C.; Poon, C.S. Life-Cycle Cost-Benefit Analysis on Sustainable Food Waste Management: The Case of Hong Kong International Airport. J. Clean. Prod. 2018, 187, 751–762.
24. Yeo, J.; Chopra, S.S.; Zhang, L.; An, A.K. Life Cycle Assessment (LCA) of Food Waste Treatment in Hong Kong: On-Site Fermentation Methodology. J. Environ. Manag. 2019, 240, 343–351.
25. Romaniuk, W.; Rogovskii, I.; Polishchuk, V.; Titova, L.; Borek, K.; Wardal, W.J.; Shvorov, S.; Dvornyk, Y.; Sivak, I.; Drahniev, S. Study of Methane Fermentation of Cattle Manure in the Mesophilic Regime with the Addition of Crude Glycerine. Energies 2022, 15, 3439.
26. Zan, F.; Dai, J.; Hong, Y.; Wong, M.; Jiang, F.; Chen, G. The Characteristics of Household Food Waste in Hong Kong and Their Implications for Sewage Quality and Energy Recovery. Waste Manag. 2018, 74, 63–73.
27. Zan, F.; Iqbal, A.; Guo, G.; Liu, X.; Dai, J.; Ekama, G.A.; Chen, G. Integrated Food Waste Management with Wastewater Treatment in Hong Kong: Transformation, Energy Balance and Economic Analysis. Water Res. 2020, 184, 116155.
28. Hong Kong Chief Executive Policy Address 2021. 6 October 2021. Available online: https://www.policyaddress.gov.hk/2021/eng/index.html (accessed on 11 April 2022).
29. Woo, P.K. Food Waste in Hong Kong: A Study on Source Reduction. Master’s Thesis, University of Hong Kong, Hong Kong, China, 2014.

30. Woon, K.S.; Lo, I.M.C. A Proposed Framework of Food Waste Collection and Recycling for Renewable Biogas Fuel Production in Hong Kong. Waste Manag. 2016, 47, 3–10.
31. Feiz, R.; Johansson, M.; Lindkvist, E.; Moestedt, J.; Påledal, S.N.; Ometto, F. The Biogas Yield, Climate Impact, Energy Balance, Nutrient Recovery, and Resource Cost of Biogas Production from Household Food Waste—A Comparison of Multiple Cases from Sweden. J. Clean. Prod. 2022, 378, 134536.
32. Secondi, L.; Principato, L.; Laureti, T. Household Food Waste Behaviour in EU-27 Countries: A Multilevel Analysis. Food Policy 2015, 56, 25–40.
33. Census and Statistics Department. Gross Domestic Product (GDP), Implicit Price Deflator of GDP and Per Capita GDP. 2022. Available online: https://www.censtatd.gov.hk/en/web_table.html?id=31 (accessed on 19 October 2022).
34. Census and Statistics Department. Survey Results of 2020 Annual Earnings and Hours Survey. Released 30 March 2021. Available online: https://www.censtatd.gov.hk/en/EIndexbySubject.html?pcode=B1050014&scode=210 (accessed on 26 May 2022).
35. Census and Statistics Department. Population and Household Statistics Analysed by District Council District. 2020. Available online: https://www.statistics.gov.hk/pub/B11303012020AN20B0100.pdf (accessed on 11 April 2022).
36. Hong Kong Environmental Bureau. Waste Blueprint for Hong Kong 2035. 2021. Available online: https://www.eeb.gov.hk/sites/default/files/pdf/waste_blueprint_2035_eng.pdf (accessed on 4 May 2022).
37. Census and Statistics Department. Household Expenditure Survey. 2019–2020. Available online: https://www.censtatd.gov.hk/en/EIndexbySubject.html?pcode=B1060003&scode=290#section2 (accessed on 19 October 2022).
38. Evans, D. Beyond the Throwaway Society: Ordinary Domestic Practice and a Sociological Approach to Household Food Waste. Sociology 2012, 46, 41–56.
39. Hebrok, M.; Boks, C. Household Food Waste: Drivers and Potential Intervention Points for Design—An Extensive Review. J. Clean. Prod. 2017, 151, 380–392.
40. Oehman, J.M.; Babbitt, C.W.; Flynn, C. What Predicts and Prevents Source Separation of Household Food Waste? An Application of the Theory of Planned Behavior. Resour. Conserv. Recycl. 2022, 186, 106492.
41. Abeliotis, K.; Lasaridi, K.; Chroni, C. Attitudes and Behaviour of Greek Households Regarding Food Waste Prevention. Waste Manag. Res. 2014, 32, 237–240.
42. Kritikou, T.; Panagiotakos, D.; Abeliotis, K.; Lasaridi, K. Investigating the Determinants of Greek Households Food Waste Prevention Behaviour. Sustainability 2021, 13, 11451.

43. Hong Kong Environmental Management Division; Hong Kong Productivity Council. Food Waste Recycling Projects in Housing Estates. 2013. Available online: https://www.wastereduction.gov.hk/sites/default/files/resources/FWRP%20-%20Executive%20Summary.pdf (accessed on 10 June 2022).
44. Lee, K.Y. A Study on Source Separation of Domestic Food Waste in Hong Kong. Master's Thesis, University of Hong Kong, Hong Kong, China, 2020.
45. Qian, K.; Javadi, F.; Hiramatsu, M. Influence of the COVID-19 Pandemic on Household Food Waste Behavior in Japan. Sustainability 2020, 12, 9942.
46. Laila, A.; von Massow, M.; Bain, M.; Parizeau, K.; Haines, J. Impact of COVID-19 on Food Waste Behaviour of Families: Results from Household Waste Composition Audits. Socioecon. Plann. Sci. 2022, 82, 101188.
47. Chong, A.C.Y.; Chu, A.M.Y.; So, M.K.P.; Chung, R.S.W. Asking Sensitive Questions Using the Randomized Response Approach in Public Health Research: An Empirical Study on the Factors of Illegal Waste Disposal. Int. J. Environ. Res. Public Health 2019, 16, 970.
48. McGinnis, M.D. Networks of Adjacent Action Situations in Polycentric Governance. Policy Stud. J. 2011, 39, 51–78.
49. O·Park 1. Organic Resources Recovery Centre Phase 1. Available online: https://www.opark.gov.hk/en/index.php (accessed on 19 October 2022).
50. LCQ15: Handling of Food Waste. 16 January 2019. Available online: https://www.info.gov.hk/gia/general/201901/16/P2019011600577.htm (accessed on 11 April 2022).