It is now commonly agreed that low carbon living will be a future requirement for all countries across the globe. Anti-environmental behaviours continue to be one of the biggest barriers to transitioning to low carbon practices and therefore it is important to consider how pro-environmental behaviours can be encouraged in the early stages of development. Most research has focused on environmental values as the main driver of pro-environmental behaviour. However, there is increasing recognition of the role that external factors play. This working paper explores to what extent structural strategies, which change

It is commonly agreed that anthropogenic actions are causing the global climate to change. High carbon usage remains a significant factor in this. Therefore, using low levels of carbon will be a future global requirement to minimise environmental degradation. This can be realised through the adoption of pro-environmental behaviours, defined as a behaviour that harms

carbon lock-in. This is being exacerbated by the importation of retired, high carbon technologies from the Global North. Environmental Leapfrog theory is defined as the ability to bypass environmental degradation on the path to low carbon living and stable GDP, through introducing mitigation measures earlier in development pathways. Climate change mitigation in the Global South is often criticised by those who believe in a right to generate pollution and that without high levels of emission growth in Global South countries their development will be stunted (Gupta, 2010). However, the availability and advancements in knowledge and technology are now believed to be such that jumping to low carbon living is possible without hindering economic growth (Rip and Kemp, 1998). Furthermore, avoiding the creation of anti-environmental behaviours could save countries the money and resources that would be later required to escape the 'carbon lock-in'.

There are a multitude of methods that can be utilised to encourage and sustain pro-environmental behaviours in the early development of urban environments. However, complexity lies in the reality that a behaviour may be beneficial for the environment on one level but harmful on another (Steg et al., 2012). Most research has focused on environmental values as the main driver of pro-environmental behaviour, however there is increasing recognition of the role of external factors, such as cost and ease (World Bank, 2015; Steg et al., 2012). Structural strategies are mechanisms that can be used to change external factors to promote pro-environmental behaviours (Steg and Vlek, 2009), and can be applied through the removal of anti-environmental options or by the use of choice architecture (Thaler and Sunstein, 2009). Both methods work through creating a green default, such that when acting under time poverty or stress - which is often experienced in areas that have undergone rapid urbanisation (World Bank, 2015) - the pro-environmental option will be chosen (Kahneman, 2012). Whilst these strategies are widely used in Global North countries, there is still a long way to go to understand their applicability and benefits across the Global South (Grilli and Curtis, 2021)[1].

Therefore, in the transition to low carbon societies it is vital that the Global South is not left behind. It is also vital to look for what opportunities might lie in the transformative change needed to meet the environmental issues. Behaviour change remains one of the biggest barriers to achieving low carbon living, and if achieved in the early stages of development it might be possible to avoid environmental degradation and move faster to low carbon cities. The role of external factors promoting pro-environmental behaviours is often overlooked and a greater understanding of how the mechanisms work in Global South contexts could shed light on potential benefits and opportunities.

This paper addresses the following question: to what extent can adopting structural strategies in Global South countries increase pro-environmental behaviours and avoid the carbon lock-in trap. This paper will first explore the current literature to gain a theoretical understanding of development planning for decarbonisation, drivers and barriers to pro-environmental behaviours, and how structural strategies have been operationalised to

In the UK, The Behaviour Insights Team, otherwise known as the 'Nudge Unit' was founded in 2010. The team have harnessed behavioural science to achieve many successful interventions such as; small charges for plastic bags and opt out pension subscriptions. The team now have offices in many Global North countries (USA, Australia, France and Canada)

benef cial in realising

In a scan of the previous literature, a number of theories have been used to understand development planning for decarbonisation. The method of backcasting, def ned as planning present development based on future needs or inevitabilities, has been a popular method for guiding development practices (Holmberg, 1998). It has been most commonly used in climate change adaptation methods, such as land-use planning for coastal encroachment (Robinson et al., 2011). However, there is growing recognition of its benef ts in planning for low carbon economies (Ashina et al., 2012; Giurco et al., 2011; Neuvonen et al., 2014), and the value it can bring to achieving the transformational change, characterised by the redef ning of existing systems, which is needed to tackle the climate crisis (Gillard et al., 2016; Roggema et al., 2012; Termeer et al., 2017). It is argued that the main benef t of backcasting is that it enables change to happen more slowly (Holmberg, 1998). Therefore the use of backcasting methods, to plan now for the future low carbon economies, could allow for slower transitions which studies show would benef t vulnerable populations (Roggema et al., 2012; Banerjee and Duf o, 2011; World Bank, 2015). However, it is important to acknowledge the ethical debates that surround the use of backcasting methods for climate change mitigation. Critics cite the dangers and potential harm that could be caused by making planning decisions based on uncertain and unpredictable climate change science (UNESCO, 2014).

Latecomer theory suggests that Global South countries can benefit from being able to learn from economies that have already advanced in the process of decarbonisation (Pang, 2007). Rip and Kemp (1998) argue that the technology and knowledge exists to allow for low carbon societies. If harnessed, as suggested possible by latecomer theory, Global South countries could move towards decarbonisation. Environmental leapfrogging as defined by Perkins (2003), builds on this to suggest it is possible for Global South countries to deviate from the development pathway previously taken by Global North countries down a pathway to lesser emissions. The theory is depicted using the famous U-shaped curve, coined as the Kuznets curve in 1995, which plots GDP growth against environmental degradation (Pang, 2007). Historically, the theory has referred to avoiding the period of the industrial revolution, but as environmental degradation still remains high in Global North countries (Reckien et al., 2017), it is possible that further environmental degradation could be avoided. However, a shortcoming of the theory is that it depicts only one country and omits any barriers which might be faced by power structures or existing systems, such as that between Global North and Global South countries as described by Dependency

The initial focus for understanding pro-environmental behaviours revolved solely around what are called internal factors (Steg et al., 2012), such as motivation, environmental knowledge, awareness, values, attitudes, emotion, responsibilities and priorities (Grilli and Curtis, 2021; World Bank, 2015). Theories such as the theory of Normative Conduct (Cialdini et al., 1991), Value-Belief-Norm (VBN) theory (Stern et al., 1999), Goal Framing theory (Lindenberg and Steg, 2007) and Affect (Redclift, 2004) have been successful in explaining pro-environmental behaviours such as not littering (Geller, 1989), opting for non-motorised transport (Gatersleben, 2007), and general pro-environmental behaviours (Nordlund and Garvill, 2002; Steg and Vlek, 2009). The availability heuristic, defined as an individual drawing on immediate examples to make decisions, has also been successfully used to explain the effect of exposure to environmental issues creating a stronger belief

Throughout the literature, policy interventions aimed at altering external factors have been categorized in a variety of ways (Grilli and Curtis, 2021; Michie et al., 2013; Steg and Vlek, 2009). However, 'structural strategies' used by Steg and Vlek (2009) is the broadest term. The literature shows policies can be enacted through nudges or the removal of anti-environmental options (Grilli and Curtis, 2021; Steg and Vlek, 2009). Nudges were first explored by Thaler and Sunstein (2009) and defined as subtly guiding choices. This approach is criticised for paternalism and lack of transparency (Barr and Prillwitz, 2014). However, it is thought that ethics are changing thanks to the urgency of climate change (UNESCO, 2014). 'Libertarian paternalism', which underpins nudge policies, is becoming more acceptable; particularly in neo-liberal contexts (Thaler and Sunstein, 2009; Grilli and Curtis, 2021). The environmental policy towards single use plastic through outright bans, as implemented in Rwanda and Bangladesh, or small taxes, adopted in the UK and Taiwan, highlights the different approaches (Convery et al., 2007; Global Citizen, 2015). Steg and Vlek (2009) argue that the effectiveness of each approach is determined by regulatory powers and existing values. Both approaches work by creating a pro-environmental default option. Defaults are effective because human thought operates in two systems famously outlined in experiments by Kahneman (2012). Automatic thinking, System 1 which "operates automatically and quickly, with little or no effort and no sense of voluntary control" (Kahneman, 2012, p20), is the system most susceptible to defaults and is most commonly enacted under time pressure or distraction (World Bank, 2015)[3]

The analytical approach will then build upon the COM-B analysis framework detailed in Figure 2.1, which considers external factors to be equally signifcant in infuencing pro-environmental behaviours. The arrows in the diagram represent potential infuence, such that changes to opportunities can infuence capacity and motivation drivers. This study will follow the reasoning of Steg and Vlek (2009) that states that policy interventions under the category of structural strategy primarily infuence external factors, or 'opportunities' as considered in COM-B framework.

Following this, the study will draw on the theory of environmental leapfrogging as defned by Perkins (2003), where zero environmental degradation is defned by MacArthur's (2013) circular economy framework, depicted in Figure 2.2.

Through this analytical lens this study will hypothesise that changes to external factors8   a   e   ˝   nY   extY   ˝

Waste generated per capita$_{year}$ =

1647.41-419.73 log (GDP per capita) + 29.43log (GDP per capita)^2

This model will be used over the period following the structural strategies from 2001 to 2018, using GDP per capita values for Taiwan. Whilst the model predicts waste generation per capita for the country as a whole, due to limited data assumptions will be made that because of the small size of the Taiwanese island it is possible to suggest that the measure will be similar for Taipei City. In line with this approach, a regression analysis to determine the predicted recycling rate, based on GDP per capita according to global trends, will be conducted with an available standardised dataset by Greenfeld (2016) of the recorded recycling rate of 35 cities across the Global North and Global South. The use of different sets of data for these two regression models is seen as a potential limitation and the use of a singular set would be suggested for future studies. In addition to this, in order to compare where Taipei sits today on the path to a circular economy, this study will consider the circularity indicators for sustainable resource use. This is defined by the European Commission under

and disease, increased; giving the country the nickname "Garbage Island" (RapidTransition, 2019). Taipei's waste disposal methods relied solely on land-fill sites, which released toxic chemicals and were likely to leak during typhoon season. In 1998, nearly two thirds of Taiwan's landfills were either approaching capacity or already full (Maynard, 2018).

Coupled with the democratic movement in Taiwan, Homemakers United, an environmental NGO made up of 10 women from Taipei, sparked environmentalism in Taipei (Maynard, 2018). This bottom up pressure suggests environmental values in the city of Taipei were high. This could have been due to the practice of Taoism, which is popular in Taiwan and supposedly encourages environmental values (Miller, 2006), or through an awareness of the problem from the littered streets through the availability heuristic as described by the World Bank (2015). These environmental values were, however, not realised in pro-environmental behaviours (Taipei City Statistical Yearbook, 2020a), suggesting Taipei was suffering from Blake's (1999) Value-Action gap due to external barriers. The bottom up pressure was
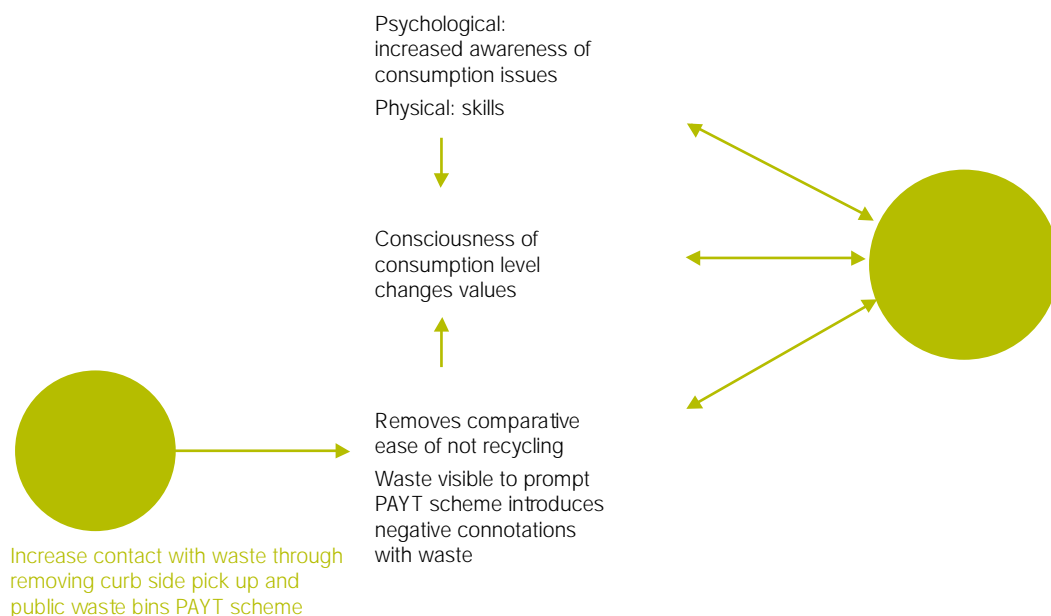
nationalisation of the system, the number of informal waste pickers decreased (Ngo, 2020). Waste picking often provides income for the urban poor in Global South countries (Medina, 2008). In this case study it has not been possible to determine the extent to which informal workers were incorporated into the new system and it is possible they were displaced. In 2000, a Pay-As-You-Throw (PAYT) scheme was introduced in Taipei, meaning that whilst recycling was free general waste could only be disposed of in purchased bags, specially labelled to prevent counterfeit production (Department of Environmental Protection, 2020). Waste bags could be brought from all local convenience stores at a cost of USD $5 for a pack of twenty 25 litre bags (Trufelman, 2016). The low pricing approach could be considered a nudge, as defined by Thaler and Sunstein (2009). The low price of the bag and maintaining free recycling was adopted so as not to exclude any level of society (Ngo, 2020). A common criticism of PAYT schemes is that cheap and unrecyclable products could result in those on low incomes being forc300B4c9Say moeefor tisplsqI XMeniiland S nxaqr I 2026 . K w% vel I I I I Pmitigted ibythe aste bDsposel cActof i1998 legislaion, 2hich inftcodu300B]TJ/C2_0 1 Tf OLSZ[@UZ[LCZVNPWU[@PSLJJ\J[OHPSaSLC

+ZJOLTLHZHWYSQLDVUL[MZpJSPTHZPJZPSleentlythasipeiBonlythas 1,001 bins, apped CrtiW t xNgo, 2020).
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4 ˘ lh O),(M
Bor bYsx er s fnc lp wogfi iu u tY ls ecuctYn lYs Yae lprbul ˘
s

To consider how effective the structural strategies were in increasing pro-environmental behaviours this study will use the COM-B Framework; drawing on the reasoning of Steg and Vlek (2009) that structural strategies primarily

Drawing on this reasoning, it is possible to suggest that the structural strate-

COM-B analysis of the impact of structural
strategies on consumption behaviours

Psychological:
increased awareness of
consumption issues

Physical: skills

Consciousness of
consumption level
changes values

Removes comparative
ease of not recycling

Waste visible to prompt
PAYT scheme introduces
negative connotations
with waste

Increase contact with waste through
removing curb side pick up and
public waste bins PAYT scheme

Waste researcher Nate Maynard argues that through this, purchasing habits
have changed in Taipei (Ngo, 2020). This is supported by waste generated
per capita data, which includes both general waste and recycling, for Taipei;
as shown in Figure 3.5. Waste generated per capita fell by 18.3% from 1991
to 2001, and whilst conclusions are limited by the 10-year period between
recorded levels, it is evident that changes before 2001, in line with the 1997
phasing in of house-to-vehicle waste collection and the removal of bins in
2000, had a significant impact on consumption levels. A decrease in con-
sumption is often associated with a decline in GDP per capita, or a decline in
disposable income. However, both are reported to have increased over this
period (Taipei Statistical Abstract, 2018). The implementation of the structur-
al strategy cannot, however, explain the plateau in consumption levels from
2006 or the steep decline in waste generated between 2011 and 2016, thus
suggesting there might be other influences to waste generation.

Volume of garbage generated per
capita in Taipei City (Taipei City
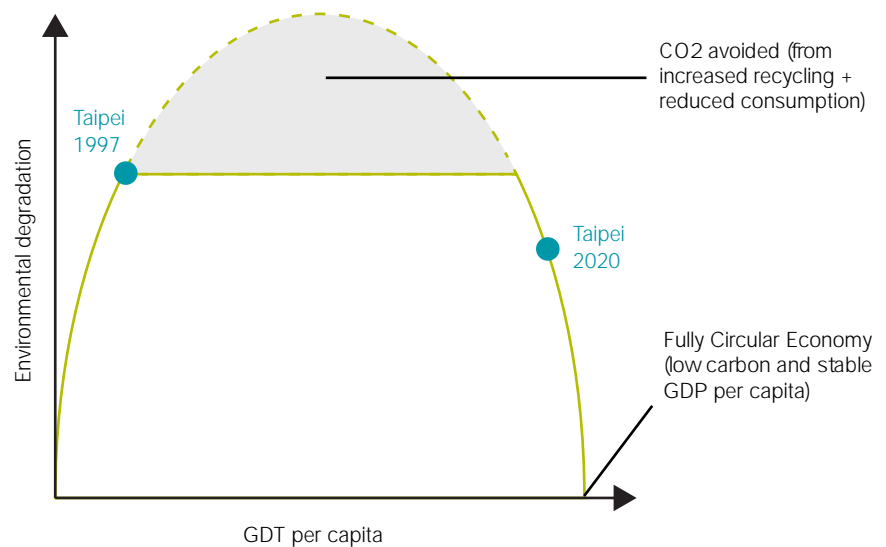Statistical Yearbook, 2020a)
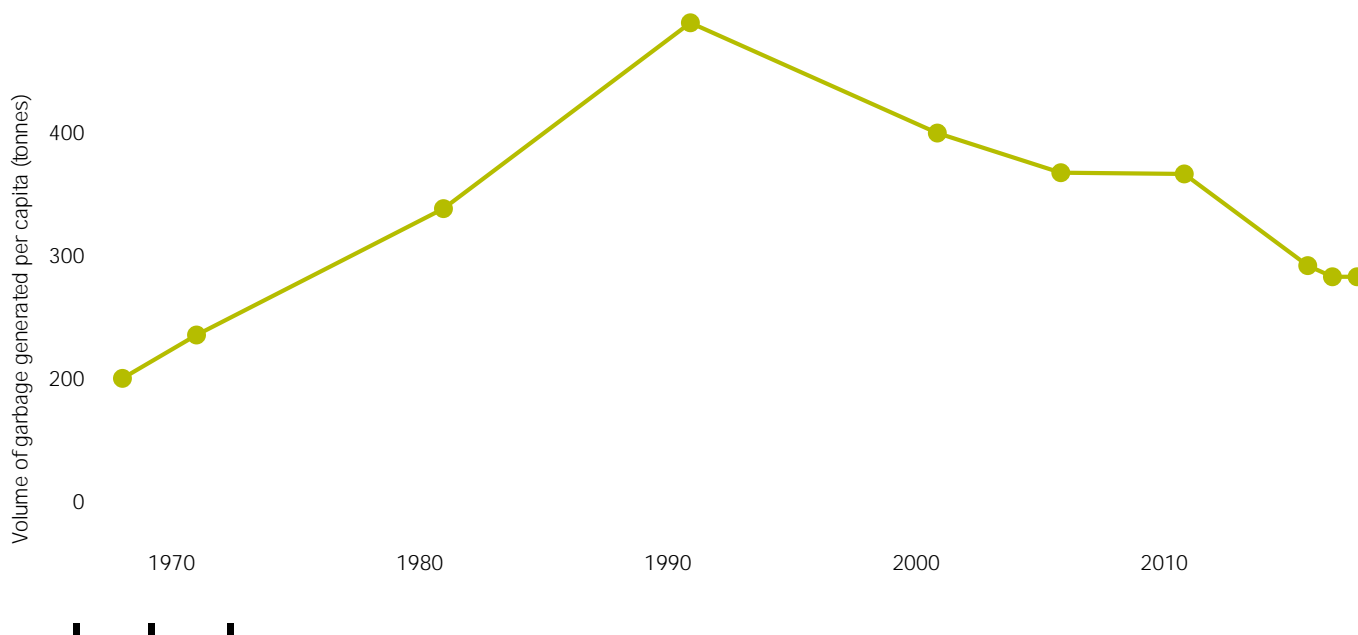
With the assumption that, on the whole, motivation and capacity drivers remained largely unchanged by other factors, this study suggests that structural strategies which altered external factors, pricing and availability, led to sharp rises in levels of pro-environmental behaviours in the city of Taipei. This is a strong assumption, as individuals are influenced by a number of different factors on a daily basis. However the results from a survey of 1,780 households in 1993 shows high environmental values (Marans and Lee, 1993), which Figure 3.4 and Figure 3.5 suggest did not translate into changes in behaviours until after the changes to external factors. This reasoning along with the correlation between the timing of structural strategies and the changes in behaviour, suggest they were instrumental in the increase in realised pro-environmental behaviours. Therefore, whilst behaviour drivers are complex and often interlinked, reasoning suggests that implementation of structural strategies led to increases in pro-environmental behaviours, such that changes to external factors are equally significant in changing behaviours. Therefore, there could be potential benefits for exploring structural strategies further in Global South contexts and giving greater weight to external factors in environmental policies to increase pro-environmental behaviours.

It could be argued that the benefits of structural strategies included avoiding environmental degradation. Global trends suggest that GDP per capita is highly correlated with consumption (Kaza et al., 20   ni   ela

Figure 3.6 also shows that Taiwan's GDP per capita slowed after 2016, how-

As part of this study, a regression analysis was conducted by the author for
the 35 cities, excluding Taipei, shows positive correlation between city recy-

Analysis of Taipei development
using the environmental leapfrog
framework.

Environmental degradation

Taipei
1997

CO2 avoided (from
increased recycling +
reduced consumption)

Taipei
2020

Fully Circular Economy
(low carbon and stable
GDP per capita)

GDT per capita

other countries, it is significant that the amount of waste recycled is also high-
er. Recycling levels tend to be lower in cities, therefore this comparison shows
Taipei to be excelling in recycling. These indicators show that whilst Taipei is
comparative with EU countries, they all still have a long way to go to achiev-
ing circular economies. Whilst it has not been possible to compare indicators
from before and after the intervention, due to availability of data, in 25 years
Taiwan has gone from 'Garbage Island' to rivalling Global North countries. It
is therefore reasonable to suggest that by changing external factors related to
recycling and consumption behaviours, Taipei has been able to avoid environ-
mental degradation and accelerate towards a circular economy as depicted
in Figure 3.8. Global trends show strong correlations between consumption
and GDP growth; however, the findings of this study suggest possibilities for
decoupling these factors. This could save Taipei time and money in correcting
these behaviours at a later date. Furthermore, findings suggest that tCO2e
from Taipei's waste management is comparatively low, with high levels of
recycling and sustainable consumption behaviours. Suggesting through early
implementation of circular objectives, Taipei is ready to meet future low carbon
requirements in the field of waste management.

Furthermore, in the case study of Taipei environmental values are suggested to be high but were not translated into pro-environmental actions, such that before the strategy implementation they were suffering from the Value-Action gap as defined by Blake (1999). It could be argued that rising CO_2 levels seen across the Global South are a reflection of the same Value-Action gap. Bottom-up environmental movements are plentiful across Global South contexts (Dwivedi, 2001) and the impact of climate change is thought to be encouraging environmental awareness and values through the availability heuristic (World Bank, 2015). Furthermore, studies in Latin American contexts suggest that, whilst still not well understood, cultures also lend themselves towards environmentalism (Bronfman et al., 2015). And whilst many Global South countries are landlocked, bordered, and have strong ties with international actors, pressures of climate change are increasingly disrupting trade routes; leaving countries isolated. Therefore, whilst a deeper understanding of specific contexts is needed, it could be proposed that acceptance of environmental policies could be as high in Global South countries as it was in Taiwan. Therefore, changing external factors could be effective in translating environmental values into pro-environmental behaviours in the face of rising urbanisation and GDP levels. As previously mentioned, behaviour change studies are often based on WEIRD assumptions and experiments. This study shows that changing external factors could be highly effective in increasing pro-environmental behaviours and could even lead to other potential benefits in Global South contexts. More in-depth research in specific contexts, drawing on primary data, could validate these findings and explore theories of behaviour drivers outside of Global North contexts.

The case study of Taipei provides an example of structural strategies being implemented in a Global South country, showing the use of such policies is possible and could be effective. However, despite being classified as a Global South country at the time, it could be argued that certain structures existed in Taipei to facilitate the implementation of a structural strategy which might not be present across Global South countries.

The collective concerted effort to maintain pressure throughout, and concentrate the population's mind on reducing waste, was achieved in Taipei through strong institutional structures and a stable government. Many cities in the Global South suffer from weak institutions as a result of colonialism and global power relations (Perkins and Neumayer, 2005), hindering the implementation and long-term planning; which this study suggests is needed for structural strategy implementation. In the case study of Taiwan external factors have been changed using nudge approaches rather than banning the anti-environmental option. However, previous bans in Global South contexts, such as plastic bans in Rwanda, where institutions could be considered weaker, have proved more successful and easier to monitor, offering an alternative method to overcome this barrier (Clapp and Swanston, 2009; Convery et al., 2007; Global Citizen, 2015). Another option could include implementation on local levels through the engagement of community leaders. However, this of course increases opportunities for cheating, which this study suggests is detrimental to the realisation of pro-environmental behaviours. Further research of localised trials could offer greater insight into whether structural strategies would be effective if applied in this manner. Finally, in weak institutions it could be possible to draw on the notion of social shaming, which was used to some extent in Taipei and thought to be effective. However, this method continues to be controversial due to the potential to cause further marginalisation.

In the case study of Taipei, the implementation of the PAYT scheme and removal of bins were low cost policies aimed at decreasing consumption. However, accommodating the increase in recycling behaviours required

funding to ensure infrastructure kept up with demand for the pro-environmental option. In Taipei, this need was met through taxes on citizens, manufacturers, and importers. However, across Global South contexts, taxation systems tend to be weak and if taxation is passed onto the population due consideration should be given to how to support the most vulnerable. The impact this would have on the realisation of behaviour change is not well understood. Funding remains a continuous barrier for development in Global South cities and the gap is often filled by private actors (Castán Broto and Bulkeley, 2013). Private companies have no duty to abide by the prescribed system and are driven by keeping customers happy and maximising profits. Whilst private waste collection continued throughout the case study of Taiwan, it was drastically reduced and it is unclear the impact that this had on behaviours. The reliance of the Global South on private actors for operating in the infrastructure sector could be a significant barrier to the implementation of structural strategies unless they were willing to cooperate. This study provides an interesting example of how infrastructure costs can be minimised during transitions to sustainable alternatives. However, a focus on behaviours that do not require the support of large infrastructure investment, such as consumption, might be more applicable in Global South contexts.
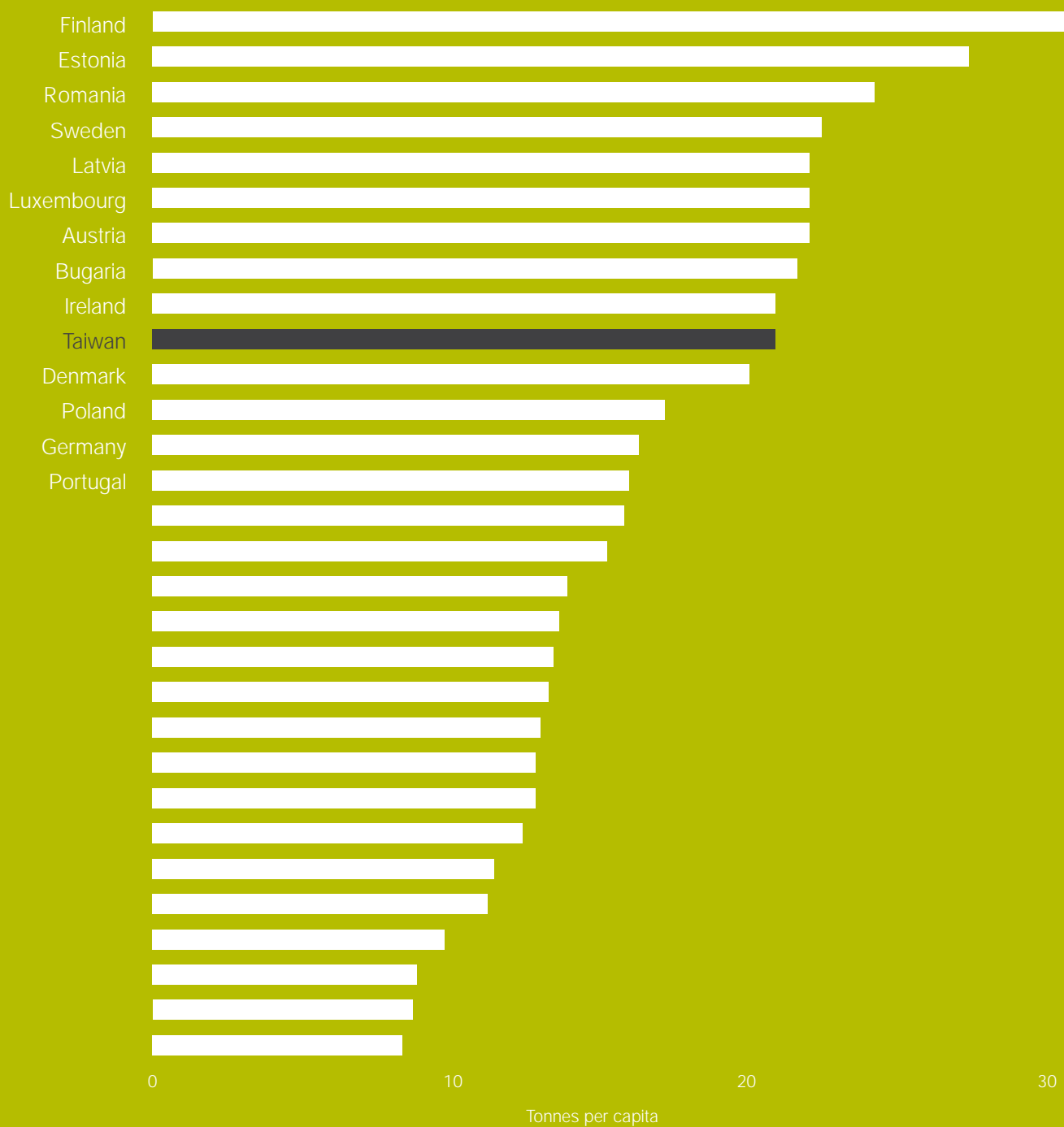
Furthermore, Global South contexts are often defined by their high quantity of informal workers. The case study of Taipei suggests that for the strategy to work, formal systems are needed. Informal work provides income to many urban poor. Therefore, the removal or discouragement of informal practices

The regression models in this study suggests environmental degradation was avoided through the implementation of structural strategies. Whilst the models were limited in predicting the true scope of what Taiwan's waste management landscape would have looked like had the strategy not been implemented, as they were based on global averages and omitted context and cultural considerations, the findings are supported by the declines in consumption and increases in recycling outside of global trends. Declines in consumption levels, despite increase in GDP per capita, act as evidence that a decoupling of GDP growth and environmental degradation is possible; as suggested by Leap Frog theory. In Taipei, the timing of these behaviours being decoupled were driven by bottom up pressure rather than strategic planning. It could be argued that the earlier the implementation, the greater the opportunities are for countries to undertake slower and more considered transitions; ensuring equal benefits across the economic and societal spectrum. Additionally, whilst not considered within the scope of this working paper, further research into the catalyst effect of the early implementation of pro-environmental behaviours on green growth and green innovation levels could highlight additional opportunities for leapfrogging and avoiding environmental degradation. It is clear that balancing GDP growth and environmental degradation during development practices is an ongoing issue, however understanding this trade of could benefit from deeper knowledge of how anti-environmental behaviours are driven by GDP growth and urbanisation through time poverty and living conditions. Utilising this knowledge to determined how the timing of decoupling behaviours effects the ability to avoid environmental degradation could lead to the full realisation of environmental leapfrogging.
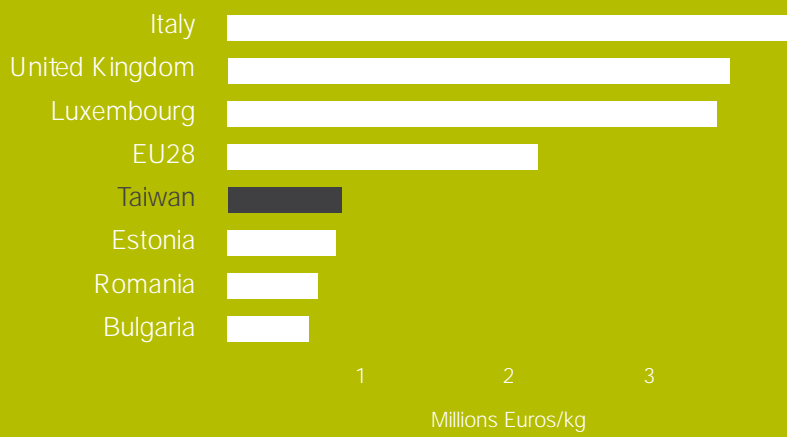
In this study the environmental leapfrog framework is limited by its exclusion of global influences and trade. However, it is important to consider the larger systems that breach country, and even continental, borders when aiming for circular economy. These behaviours are all strongly associated with the Global North and signify wealth. To fully decouple these behaviours, Global North actors have a prominent role in denouncing these anti-environmental behaviours. Without this, Global South countries might have little motivation to limit their already small emissions and be convinced by the need for reduced consumption. Furthermore, environmental degradation in Global South countries is highly impacted by manufacturing, mining, deforestation and intense farming practices driven by global demand. These structures are often a product of the dependent relationship between the Global North and South. In this study, Taiwan's exclusion from the international sphere could, to an extent, have benefitted the ability to decouple environmental degradation from GDP growth. Therefore, where global influence is strong, decoupling GDP growth from

In conclusion, it is now commonly agreed that the future is low carbon and therefore countries in the Global South shouldn't fall into the same carbon lock-in trap as the Global North. It is vital to look at what opportunities will present themselves during this period of transformative change for accelerating development and achieving sustainable systems. It is evident that a lot of factors influence the determinants of anti-environment behaviours and geopolitical structures might often hinder the agency of Global South countries in correcting these. In this research I have shown that further studies of external factors, and structural strategies which alter these, in Global South contexts could provide interesting insights for encouraging pro-environmental behaviours as the default option. As the field of behaviour change is expanding there is a need to create a Global South knowledge basis to explore potential benefits and avoid imposing Global North assumptions. Furthermore, this research showed the potential benefits of decoupling GDP growth from anti-environmental behaviours. Further research could help better understand the relationship between anti-environmental behaviours and the processes of urbanisation to determine how well-placed strategies could be adopted to benefit countries in the Global South on their path to low carbon societies.

Waste generated actual
(Taipei City Statistical Yearbook, 2020a),
predicted calculated using World Bank regression model
(Kaza et al., 2018)

| 317 | 318 | 384 | 397 | 411 | 415 | 2242 |
| 397 | 365 | 364 | 290 | 281 | 281 | 1998 |

Hong Kong	81.2	43734.2
San Francisco	80	57904.2
Melbourne	73	49971.1
Seoul	63.5	27608.2
Singapore	61	56724.2
Copenhagen	59	54664
Adelaide	54	49971.1
Los Angeles	50	57904.2
Quezon City	39	2941.21
Lahore	35	1368.45
London	33.9	41074.2
Bangalore	32	1729.27
Berlin	29.6	42098.9
Athens	24	18116.5
Tokyo	23.4	38794.3
Rotterdam	23	46007.9
Bishkek	18	1120.67
New York	17	57904.2
Boston	16.9	57904.2
Dhaka	15	1401.62
Lusaka	14	1280.58
Paris	12.5	36962.2
Madrid	11.6	26505
Dubai	11.5	36226.23
Chicago	11.1	57904.2
Sofa	11	36962.2
Kampala	11	608.71
Jakarta	10	3562.85
Bahrain	8	22619.1
Buenos Aires	8	12790.2
Guadalajara	8	8739.76
Monrovia	8	714.62
Amman	7	4103.73
Beijing	4	8078.79
Shanghai	2.5	8078.79
Taipei	58.32	22573

Remade from (EU, 2017) using data for Taiwan
from (Chen, 2013), with a growth multiplier defined by
(Wang et al., 2014) to estimate 2015 figures

Finland
Estonia
Romania
Sweden
Latvia
Luxembourg
Austria
Bugaria
Ireland
Taiwan
Denmark
Poland
Germany
Portugal

0   10   20   30

Tonnes per capita

Italy
United Kingdom
Luxembourg
EU28
Taiwan
Estonia
Romania
Bulgaria

1   2   3

Millions Euros/kg

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