



# Adaptive Governance for Hong Kong's Country Parks Network

An assessment of the parks management regime,  
and proposals for ways forward

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# Summary

Hong Kong has an impressive network of Country Parks. They are managed effectively to support passive recreation, but little has been done to manage or enhance their biodiversity.

Leading park managers around the world have recognised that an adaptive governance approach is critical to the effective management of park networks. This approach emphasizes that park institutions need to be flexible, and management experimental, to appropriately respond to a nature in flux.

This paper provides a snapshot of the current status of park management in Hong Kong, and explores in depth examples of international best practice. It also outlines ideas for revising the governance of the Country Parks network.

The intention of this paper is to initiate a conversation about the role and management of the parks network, and how its values can be upheld, restored and expanded.

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# Introduction

For a city renowned for confined urban living, it is ironic that Hong Kong also possesses large swaths of green space in its proverbial 'backyard'. The government has long designated large areas of rural terrain, particularly the hills, ridges and areas surrounding water reservoirs as country parks. Today, there are 23 country parks scattered across its territory, which amounts to approximately 41 percent of Hong Kong's total area<sup>1</sup>. This percentage is one of the highest in East Asia<sup>2</sup> and the world<sup>3</sup>, which have been both a source of pride and a reason for inaction by park authorities.

Hong Kong's Country Parks Ordinance specifies that the Director of the AFCD<sup>4</sup> has the authority to manage the territory's country parks<sup>5</sup>. The mandate allows the department to designate, develop and manage these areas, in order to fulfill the priorities of conservation and recreation<sup>6</sup>.

Balancing these concerns can be a major challenge, but many park managers in other parts of the world have developed comprehensive management plans, guided by principles, visions and strategies, to ensure management actions coherently plan for ecological change, while minimising the risk of conflict within the park, and with development aspirations outside of it. It has been found that parks with a plan are better managed than ones with no plans, as the process of developing a plan often results in reflection of current practices, activate strategic thinking, and outreach to stakeholders<sup>7,8,9</sup>. If management is strengthened by the plan formation process, then by the same token, the lack of management plans may be an indication of an inadequacy in management planning.

Management plans have yet to be developed for Hong Kong's parks system. In fact, there are no statutory provisions within the Country Parks Ordinance for periodic development of management plans. At the same time, development pressure continues to threaten country park lands, as well as in areas adjacent to park boundaries, which are increasingly provoking concern amongst societal groups. They see such proposals as indicative of a development-led approach to land management in Hong Kong, that even country park designation cannot guarantee protection.

Recent examples of such conflict include the government's improvised redrawing of the country park borders at Clearwater Bay Country Park to provide land for the extension of the South East New Territory landfill, was met with a near-unanimous rejection of the plans by lawmakers and arousing vocal opposition from local residents, who were likely to bear the environmental cost of increased smell and noise pollution<sup>10</sup>. As well, the sale of land on Tai Long Sai Wan, on the fringes of a country park, to a local tycoon for private development also drew the ire of the public, not least for the proposed development's proximity to

<sup>1</sup> The Hong Kong Council of Social Service (2008), "Country park, marine park, SSSI, RAMSAR sites [protected land] as a percentage of total land area", *Social Indicators of Hong Kong*, [http://www.socialindicators.org.hk/en/indicators/environmental\\_quality/23.1](http://www.socialindicators.org.hk/en/indicators/environmental_quality/23.1), accessed on 23 Feb 2011.

<sup>2</sup> Wong, F.Y. (2004), "A City Defends its Natural Heritage: Hong Kong's country and marine parks", in Trzyna, T. eds., *The Urban Imperative: Urban Outreach Strategies for Protected Area Agencies*, IUCN.

<sup>3</sup> Ng, C.N., Li, Y. (2000), "Eco-tourism in Hong Kong: its potentials and limitations", paper presented at the Cuarta Feria Ecoturistica y de Produccion, 15-23 July 2000, Santo Domingo, The Dominican Republic.

<sup>4</sup> Agriculture, Fisheries and Conservation Department (AFCD), which reports to the Food and Health Bureau of the Hong Kong SAR Government.

<sup>5</sup> Country Parks Ordinance, Cap 208, s3

<sup>6</sup> *Ibid.*, s4

<sup>7</sup> Leverington, F., Hockings M., Costa, K.L. (2008), "Management effectiveness evaluation in protected areas: Report for the project 'Global study into management effectiveness evaluation of protected areas'", The University of Queensland, Gatton, IUCN WCPA, TNC, WWF, Australia.

<sup>8</sup> Moore, S., Rodger, K., 2009, Learning From Others: A selective review of management planning approaches in Australia, report prepared by the conservation commission of Western Australia, Crawley, WA.

<sup>9</sup> Hockings, M., Cook, C.N., Carter, R.W., James, R. (2009), "Accountability, Reporting, or Management Improvement? Development of a State of the Parks Assessment System in New South Wales, Australia", *Environmental Management*, Vol. 43, pp.1013–1025.

<sup>10</sup> "No Choice but to Recycle and Incinerate Waste", *South China Morning Post* (23 October 2010).

ecologically-sensitive parklands, and one of the most pristine and valued sandy beaches in the territory<sup>11</sup>. These examples highlight a yearning for park authorities to account for the ecological and landscape value both within and close to designated country parks, and to instill this into the planning ethos of park management in Hong Kong.

Country parks are not only threatened by development encroachment, but other systemic concerns such as climate change, hill fire episodes, natural succession and illegal dumping. In turn, management can be ill-equipped in responding to these threats if it is coupled with inadequate provisions for monitoring, evaluation, and stakeholder participation<sup>12</sup>. Management can be prevented from becoming reactive and frequently surprised if sufficient management planning were in place. This is not to say that threats will not arise if the parks were more effectively managed, but that mitigation and adaptation efforts can be more directly executed if developed prior to a threat's manifestation.

Adaptive management has become the core feature of international best-practice in park management planning, and is touted as a way for park managers to deal with uncertainty – through a process of continuous learning, reviewing, and updating of management goals to reflect new theories and field knowledge, as well as evolving stakeholder values and desired states of the environment. By clarifying management objectives and monitoring the ecological response to management actions, a framework for decision-making can be formulated, which often helps to resolve and ameliorate conflicting objectives.

With this paper, Civic Exchange aims to utilise the adaptive governance approach to inspire country parks authorities to engage stakeholders more, and adopt an adaptive framework that helps to coordinate the broad societal goals into the management of country parks. This paper will outline broad themes that must be addressed in the transition towards an adaptive approach to country park management, including:

1. International and Local Context – devising coherent management goals that are consistent with global practices and local policies
2. Country Park Design – creating a parks network that adheres to the principles of comprehensiveness, representativeness and adequacy
3. Country Park Planning and Management – adopting an active and adaptive management approach to parks management
4. Strengthening Partnerships and Community Support – to open up the decision-making process through innovative engagement

Through discussions about these themes, this paper may serve as guidance for reviewing and improving parks management, to facilitate a more equitable balance between ecological conservation and user recreation for Hong Kong's country parks.

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<sup>11</sup> Lam, O (22 July 2010), "Hong Kong: Citizen campaign to save Tai Long Beach", Global Voices, <<http://globalvoicesonline.org/2010/07/22/hong-kong-citizen-campaign-to-save-tai-long-beach/>>, accessed on 27 October 2010.

<sup>12</sup> The Countryside Agency (2005), National Park Management Plan – Guidance, UK Government.

# Historical Context

## Conflicts and their Antecedents

Since the country parks' inception, managers of the park system have been confronted with a stream of concerns and controversies about the use, and misuse, of park space. While the aforementioned conflicts involving the SENT landfill and Tai Long Sai Wan cases differ in the developments' intended public/private utility, as well as intrusion within/on the fringes of official park lands, they both, at their core, represent concerns about how public space should be used. To broach another issue of tension, the ongoing demands by mountain bikers for trails separate from hikers, draws attention to conflicting uses within country parks, as safety of both parties are of concern when trails are expected to be shared<sup>13</sup>. These conflicts ultimately relate to the use of the natural environment, as the former cases give emphasis to enduring development threats, while the latter case illustrates the struggle between two types of recreationists with evidently dissimilar demands on the environment. Yet, all of these disputes serve to raise an even more fundamental question: what is the purpose of country parks, and whose purpose should they fulfill?

When country parks were first established in the 1970s, the boundaries of the protected areas were mainly drawn around reservoir watersheds, as well as high elevation areas that were perceived to have little development value at the time<sup>14</sup>. As a result, the country parks primarily functioned to hold back development from encroaching on land designated for preserving and enhancing Hong Kong's water resources. Management was focused on reforestation efforts on the denuded landscape, particularly around reservoirs to enhance water yields and prevent sediment erosion<sup>15</sup>. Exotic tree species such as the Brisbane box, paper-bark trees and Taiwan acacia species<sup>16</sup> were preferred for its fast-growth properties<sup>17</sup>, and provided a stop-gap measure to mitigate the weathering of top soils. Their proliferation, however, has led to wide coverage of former grasslands with non-native tree species.

Tensions in squalid urban areas culminated in the 1966-7 riots, eliciting governmental response to tackle the issue by creating provisions for recreation in rural areas<sup>18</sup>. The British formula of classifying 'country parks' for the purpose of visitation and recreational enjoyment must have influenced the uptake of the term for the Hong Kong context. However, its application was somewhat different, as outlined in the Country Parks Ordinance in 1976, which specified that country parks in Hong Kong are to be designated not only for countryside recreation, but also for the purpose of nature conservation and outdoor education<sup>19</sup>.

Since the 1970s, the country park authorities have done well at pursuing the recreational mandate, as is reported in 1986 that almost all possible sites for recreation have been developed<sup>20</sup>. This work included a focus on improving access by constructing roads, barbeque pits, toilets and other facilities for the casual enjoyment of visitors. Thereafter, effort has shifted from the quantity of recreational facilities, to quality and variety to cater for the needs of specialised users<sup>21</sup>; however, this transition is evidently still been undertaken, as the conflict between mountain bikers and hikers shows.

<sup>13</sup> "Hot on the Trails", *South China Morning Post* (5 October 2008).

<sup>14</sup> Thrower, S.L. (1984), *Hong Kong Country Parks*, Hong Kong: Government Information Services.

<sup>15</sup> Jim, C.Y. (1985), "The Country Parks Programme and Countryside Conservation in Hong Kong", *The Environmentalist*, Vol. 6, No. 4, pp.259-270.

<sup>16</sup> Otherwise known as *Lophostemon confertus* (Brisbane Box); *Acacia confuse* (Taiwan Acacia), *Melaleuca quinquenervia* (paper-bark trees).

<sup>17</sup> Dudgeon, D., Corlett, R. (2004), *The Ecology and Biodiversity of Hong Kong*, Hong Kong: Joint Publishing (HK) Ltd.

<sup>18</sup> Note 15, p.283.

<sup>19</sup> Country Parks Ordinance, Cap. 208, s4

<sup>20</sup> Note 15, p.265.

<sup>21</sup> *Ibid.*

## **Biodiversity: Abundant and Fragmented**

Yet, while a considerable amount of land has been established for recreation, less is provided for biodiversity conservation<sup>22</sup>, which may not be so surprising when biodiversity was not a specific criterion for parks selection in the first place<sup>23</sup>. That being said, Hong Kong boasts an impressive range of biodiversity, with a recorded 1,920 species of flowering plants, 55 species of mammals, 23 species of amphibians, 73 species of reptiles, 233 species of butterflies and over 2,000 species of moths<sup>24</sup>. It has been noted that despite its small size (1,098 km<sup>2</sup>), Hong Kong in fact possesses more wild species than Great Britain<sup>25</sup>. Analysis of biodiversity populations by experts at the University of Hong Kong identified that there is a prominent difference in the level of protection offered to different taxa. For example, rare plants and amphibians, which are known to survive well in relatively small forest fragments<sup>26</sup>, are well represented within Hong Kong's series of protected areas. Meanwhile butterflies, ants and reptiles were poorly represented<sup>27</sup>. The fragmentation in species abundance is likely due to the legacy of country park designation of high-altitude areas, with poor representation of lowland habitats such as freshwater wetlands and feng shui woodlands within the country parks network. Yet many surviving lowland habitats are highly diverse, e.g. 83% of butterfly hotspots were found in unprotected areas, such as amongst the feng shui woodlands<sup>28</sup>.

The reforestation efforts, intended to enhance the water catchments surrounding the reservoirs in the post-war years were in fact embarked on throughout the British colonial period, as continuous human occupation in the territory had left the once evergreen forests in Hong Kong completely deforested<sup>29</sup>. This meant, regrettably, that almost no remnant primary forests remain, and that the dominance of secondary vegetation<sup>30</sup> has made it especially difficult for native flora and fauna to be replicated, when there are so few examples of native species variability to draw from.

## **Corridors for Biodiversity**

Ecologists point to the need to link protected areas to safeguard and enhance the flora and fauna populations. Viable populations are unlikely to be supported by existing protected areas if they are not connected to allow wildlife movements<sup>31</sup>. Hong Kong's substantial apportioning of land as country parks does fulfill the basic conservation requirement, and perhaps the political obligation, for nature conservation, but it is clear that the areas covered are short of being comprehensive and adequate. From a biodiversity standpoint, linking the existing protected areas within Hong Kong, as well as with other conservation areas in the Pearl River Delta are vital, and that policies need to be adjusted to accomplish the requisite conservation objectives.

<sup>22</sup> Jim C.Y., Wong F.Y. (1996), "The protected area system in Hong Kong: its management and prospects", in Jim, C.Y. and Li, B.S., eds, *Protected Areas and Nature Conservation in East Asia*, Joint Publishing (Hong Kong) Company Ltd, Hong Kong, pp.178–202.

<sup>23</sup> Yip, J.Y., Corlett, R.T., Dudgeon, D. (2004), "A fine-scale gap analysis of the existing protected area system in Hong Kong, China", *Biodiversity and Conservation*, Vol. 13, pp.943-957.

<sup>24</sup> Note 23, p.945.

<sup>25</sup> Note 17.

<sup>26</sup> Corlett, R.T., Xing, F., Ng, S.C., Chau, K.C., Wong, L.M.Y. (2000), "Hong Kong vascular plants: distribution and status", *Memoirs of the Hong Kong Natural History Society*, Vol. 23, pp.1–148.

<sup>27</sup> Note 23, p.951.

<sup>28</sup> *Ibid.*, p.953.

<sup>29</sup> In 1945, Hong Kong's total forested area was <4% (Dudgeon & Corlett, 2004).

<sup>30</sup> 17% of which are reforested through planting and natural succession, and another 20% with secondary shrubs (Dudgeon & Corlett, 2004).

<sup>31</sup> Pei, K.J.C., Lai, Y.C., Corlett, R.T., Suen, K.Y. (2010), "The Larger Mammal Fauna of Hong Kong: species survival in a highly degraded landscape", *Zoological Studies*, Vol. 49, No. 2, pp.253-264.

**Box 1: Conservation approaches in protected areas**

Conservation approaches have evolved with changing conceptions about wilderness and pristinety<sup>32</sup>. These approaches, in turn, have influenced the core purpose and ideals behind the designation and management of protected areas. Four main approaches to conservation have been developed:

1. Wilderness Conservation, e.g. the Yellowstone model
2. Wise Use, e.g. Game Reserve
3. Wildlife and Biodiversity Conservation, e.g. Biodiversity hotspots
4. Ecosystem Approach, e.g. Adaptive management

The park model was first established in 1872 when Yellowstone National Park was set up to safeguard wilderness areas and the aesthetic features of the landscape. Parks around the world were formed using the Yellowstone model, which was thought valuable because of the psychospiritual and recreational benefit it provided<sup>33</sup>.

Hong Kong's country parks network was developed much later, and were established primarily to protect the reservoir watershed, and thus adopted a 'wise use' approach of locking-up land and resources to prevent over-exploitation<sup>34</sup>. Aesthetic value and appreciation of the 'wilderness' came subsequent to the parks' designation, and only after access and recreational facilities were installed to offer a respite from the urban squeeze.

The current approach to conservation in country parks in Hong Kong recognises the need to sustain a sense of wilderness by safeguarding the natural aesthetic appeal along visitor trails. A science-based approach to conservation is evident in some of the species monitoring work that the AFCD undertakes, but this does not appear to have extended beyond limited biodiversity surveys, nor is there a suggestion that a culture of learning and knowledge sharing exists<sup>35</sup> within the department. The extent to which the identification of biodiversity hotspots are robustly influencing management planning for country parks is unclear, as reported cases of development threats mar the perception of a management regime that upholds its conservation mandate with authority. Therefore, Hong Kong's management approach seems to be treading undecidedly onto the third strand of wildlife and biodiversity conservation, where the identification of biodiversity hotspots, utilising species richness, endemism, and habitat loss as measures of value<sup>36</sup>, are used to highlight areas in need of protection.

Meanwhile, many of its overseas counterparts are moving away from 'fortress conservation', to the latest paradigms of biodiversity conservation, of an understanding that nature is in constant flux, rather than in balance, and embracing the idea that people are a part of nature rather than separate from it<sup>37</sup>. New international benchmarks are being established based on this concept of ecosystem management, which actively applies adaptive management to infuse a degree of flexibility in the maintenance of biodiversity, inviting space for variation and change to pervade.

The management of Hong Kong's country parks system remains a step behind international best practice, as an ecosystem approach is not yet evident. Biodiversity and habitat conservation, based on the third strand, has also yet to reach fruition, despite the potential of the AFCD's surveying efforts of biodiversity hotspots. While such data is essential, there is much that is still unknown, especially pertaining to uncertainties about the climate's impact on Hong Kong's natural vegetation, and will require ecological studies of population change and habitat shifts. These studies need to be instigated before adaptation strategies, and planning, can be designed. Clearly, the management of Hong Kong's country parks ought to adopt an ecosystem approach, and observe international best practices as guiding examples.

<sup>32</sup> Kalamandeen, M., Gillson, L. (2007), "Demything "wilderness": implications for protected area designation and management", *Biodiversity Conservation*, Vol. 16, pp.165-182.

<sup>33</sup> *Ibid.*, p.168.

<sup>34</sup> Carr, E. (2002), "Park, forest and wilderness", *The George Wright Forum*, Vol. 17, No. 2, pp.16-30.

<sup>35</sup> Staff training does occur, e.g. staff attending a mountain biking conference to learn about best-practice trail design (C.H. Leung, personal communications). However, it does appear that scientific and management learning remains disciplinary, departmental, and fragmented.

<sup>36</sup> Myers, N., Mittermeier, R.A., Mittermeier, C.G., da Fonseca, G.A.B., Kent, J. (2000), Biodiversity Hotspots for Conservation Priority, *Nature*, Vol. 403, pp.853-858.

<sup>37</sup> Note 32, p.172.

## Country Parks Planning and Management Responsiveness

Designation alone does not guarantee a well-functioning park. That is to say, it does not ensure that biodiversity can be adequately protected, or that the user needs of different recreational enthusiasts are catered for. While designation can improve the opportunity for biodiversity to thrive, it means little if the parks status does not bestow a kind of reinforcement from emerging threats. Hence, there needs to be adequate and pre-emptive management in order to cope with the threats, whether natural or human-induced, which imperil the functioning of country parks.

Opinion about the role that protected areas could play in nurturing biodiversity, defending nature's aesthetic value, and controlling for human manipulation have altered with time (see Box 1), while the management of these areas have been altered in tandem with the changed outlook.

Before the enactment of the Country Parks Ordinance, there was almost no management or planning of the countryside, besides actions to reforest areas bordering reservoir watersheds<sup>38</sup>. When the Ordinance charged the AFCD to designate, and importantly to 'manage' country parks, the park boundaries immediately gave the department the mandate to centralise authority. A top-down command and control regime, employing a 'fences and fines' approach, immediately became the key paradigm for management<sup>39</sup>. Properly executed, such techniques can be a strong deterrent for illegal activity and serve as a disincentive for inappropriate development to be proposed. Yet, various development threats have placed pressure on country parks and other pocket areas, challenging the AFCD's capacity to defend these areas under conflict. One recent example is the proposal for excision of country parks land to make way for extensions to the SENT landfill. Other disputed areas of high ecological value, such as Sha Lo Tong<sup>40</sup>, Sham Chung<sup>41</sup>, and Nam Sang Wai<sup>42</sup>, highlights the necessity for conserving areas outside the park boundaries. The threats include private development projects, the paucity of livelihood sustainability of villagers in these areas, as well as the challenge to government authorities in managing these various demands. As a result, the management of Hong Kong's country parks, and other areas of ecological significance, have been described as inadequate<sup>43</sup>, poorly resourced<sup>44</sup>, and lacking a consistent vision for progress.

The extent to which management actions of the AFCD are monitored, audited and filtered back to revise operational goals is unclear, as there are no publicly accessible management plans for Hong Kong's country parks network. As the managers of the country parks, the AFCD has not outlined a clear vision or set of objectives that directs management actions in its annual report against which management actions could be measured. It does, however, produce quarterly plans at each management centre<sup>45</sup>, which are essentially working documents that are not available to the public, but nevertheless charts the management tasks of the centre for the coming quarter. These plans have been standardised over the years to include activities such as tree planting, patrolling schemes, and fire management plans. This is essentially a bottom-up approach, whereby the management needs are determined on a location-specific basis (by each management centre, and reported to the headquarters for approval). The degree to which scientific knowledge is trickled down to influence on-ground management, and the back-feed of field experience to

<sup>38</sup> Note 14, p.11.

<sup>39</sup> Chapple, R.S., Ramp, D.R., Kingsford, R.T., Merson, J.A., Bradstock, R.A., Mulley, R.C. and Auld, T. (2011), "Management of ecosystem threats in the Greater Blue Mountains World Heritage Area, Australia", *Environmental Management*, (in review)

<sup>40</sup> Hopkinson, L. (2002), *Conservation of Sha Lo Tung: A way forward*, Civic Exchange, <[http://www.civic-exchange.org/eng/upload/files/200206\\_ShaLoTung.pdf](http://www.civic-exchange.org/eng/upload/files/200206_ShaLoTung.pdf)>, accessed on 15 November 2010.

<sup>41</sup> "Greens fire new salvos in battle to protect wetland", *South China Morning Post* (18 April 2006).

<sup>42</sup> Cheung, C.F., "Henderson out to salvage wetlands plan", *South China Morning Post* (11 December 2010).

<sup>43</sup> World Wide Fund for Nature (2010), WWF's Recommendations for the 2010-2011 Policy Address – Building Green Livelihoods for a Truly Green City, <[http://assets.wwf.hk.panda.org/downloads/wwf\\_s\\_recommendations\\_for\\_2010\\_2011\\_policy\\_address\\_eng.pdf](http://assets.wwf.hk.panda.org/downloads/wwf_s_recommendations_for_2010_2011_policy_address_eng.pdf)>, accessed 16 November, 2010.

<sup>44</sup> Cheung, C.F., Wong, O., "People power is leading the war on land rogue", *South China Morning Post* (16 November 2010).

<sup>45</sup> There are 21 management centres, serving Hong Kong's 24 country parks. Each management centre is equipped with field staff that undertakes operational tasks such as tree planting, patrolling, fire management, etc.

inform and reorient science-based model, is uncertain, but this rotational sequence of knowledge transfer is critical in the evaluation of management adequacy and competence.

Management and strategic matters concerning country parks are deliberated by the Country and Marine Parks Board, which acts as a consultative body to the parks authority (i.e. AFCD). However, the issues to be discussed are dictated by the authority<sup>46</sup> themselves, which ultimately limits the capacity of the Board to propose change or evaluate management practice. What is needed is a decision-making framework applied at the authority level that formalises and sets out how knowledge can be integrated into park management in a transparent manner. International best-practices can offer guidance as to how such a framework has been applied elsewhere, and how it could be applied to Hong Kong.

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<sup>46</sup> Country and Marine Parks Authority (2009), *Report of the Country and Marine Parks Board*, From 1 September 2007 to 31 August 2009, Agriculture, Fisheries and Conservation Department, <[http://www.afcd.gov.hk/english/aboutus/abt\\_adv/files/CM\\_Parks\\_Board\\_Rep\\_6\\_OP\\_Eng.pdf](http://www.afcd.gov.hk/english/aboutus/abt_adv/files/CM_Parks_Board_Rep_6_OP_Eng.pdf)>, accessed on 17 November 2010.

# Adaptive Governance: a new decision-making framework

Adaptive management has been the dominant approach for protected areas management in recent years, and is one of the core strategies outlined by the IUCN for ensuring management effectiveness and governance quality of protected areas<sup>47</sup>. It was designed to address the shortcomings of previous approaches, by moving beyond the conventional disciplinary, fragmented and departmental approach<sup>48</sup>. An adaptive approach came about from the understanding that the complexity and uncertainty involved in environmental and natural resource management requires a process that is holistic, integrates science, involves the public in a meaningful way, and administered via flexible policies and institutions<sup>49</sup>.

What is advocated through this paper is the concept of adaptive governance for Hong Kong's country parks system, which is broader than adaptive management, to include policy and decision-making, not just management<sup>50</sup>. The core feature of an adaptive governance approach is a 'learning-by-doing' experimental framework<sup>51</sup>, in which the latest ecological science informs and updates management actions, the success of which then determines how policies should be adjusted. The principles of adaptive governance have been implemented in several countries with much success. Canada has employed an ecosystem management paradigm in several catchment areas, and gained the commitment of all stakeholders through a common aspiration for better water quality<sup>52</sup>. The shared vision was coupled with inclusive policies, capacity building outlays, and an emphasis on community stewardship<sup>53</sup>. Similarly, South Africa's Kruger National Park had adopted an adaptive management framework that is led by an overarching vision, followed by a hierarchy of management objectives, with a capacity to integrate scientific research into management practice, and administered under a single jurisdictional agency<sup>54</sup>.

Hong Kong can learn from these examples of best-practice, and benefit from such an approach, as the process can allow the country parks network to be governed by a set of goals that is shaped by the values of stakeholders and best available knowledge, matched by strategic policies and achieved via an adaptive management framework. The paper outlines four thematic areas that need to be considered in implementing an adaptive governance framework, with key strategic priorities under each theme summarised in Figure 1, and discussed in detail in the following sections. It should be noted that a suggested strategic direction is presented, but that a more comprehensive assessment will be required, including a thorough stakeholder values assessment, by the relevant authorities in implementing such a framework.

<sup>47</sup> Dudley, N., eds. (2008), *Guidelines for Applying Protected Area Management Categories*, Gland, Switzerland, International Union for Conservation of Nature (IUCN).

<sup>48</sup> Cortner, H. (2001), "Making science relevant to environmental policy", *Environmental Science and Policy*, Vol. 3, pp.21-30.

<sup>49</sup> Ibid.

<sup>50</sup> Brunner, R.D., Steelman, T.A., Coe-Huell, L., Cromley, C.M., Edwards, C.M., Tucker, D. (2005), *Adaptive Governance – Integrating Science, Policy and Decision Making*, Columbia University Press, USA.

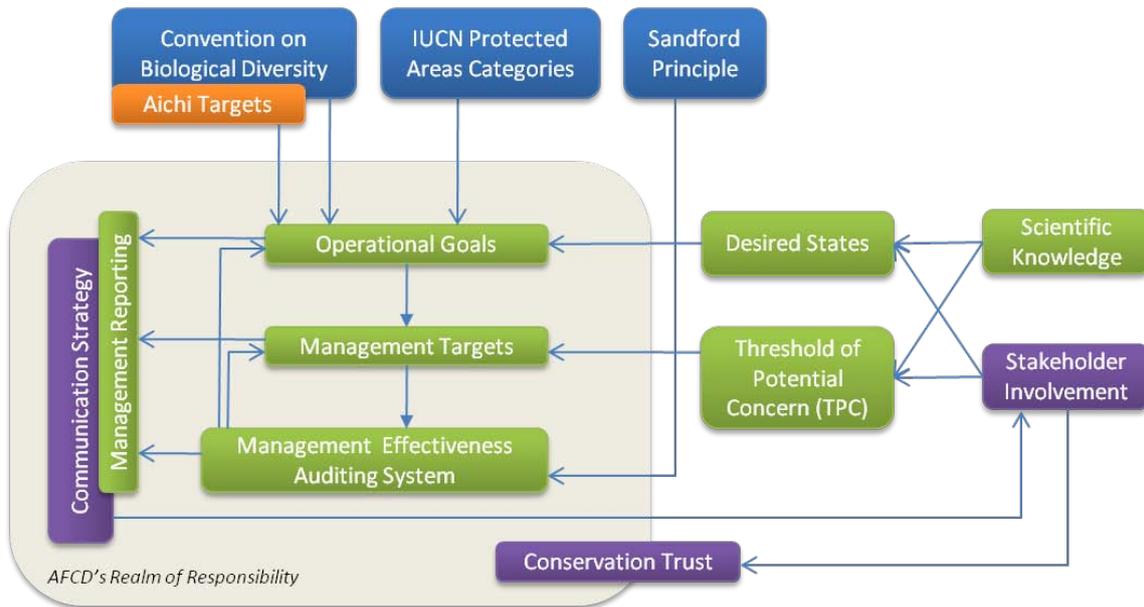
<sup>51</sup> Walters, C.J., Holling, C.S. (1990), "Large-scale management experiments and learning by doing", *Ecology*, Vol.71, pp.2060–2068.

<sup>52</sup> Lumb, A., Héalie, R. (2006), "Canada's ecosystem initiatives", *Environmental Monitoring and Assessment*, Vol.113, pp.1-3.

<sup>53</sup> Note 52.

<sup>54</sup> Parr, C.L., Woinarski, J.C.Z., Pienaar, D.J. (2009), "Cornerstones of biodiversity conservation? Comparing the management effectiveness of Kruger and Kakadu National Parks, two key savanna reserves", *Biodiversity and Conservation*, Vol.18, pp.3643-3662.

**Figure 1: Summary of Strategic Priorities**



- Theme 1: International and Local Contexts
- Theme 2: Country Parks Design
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# Theme 1:

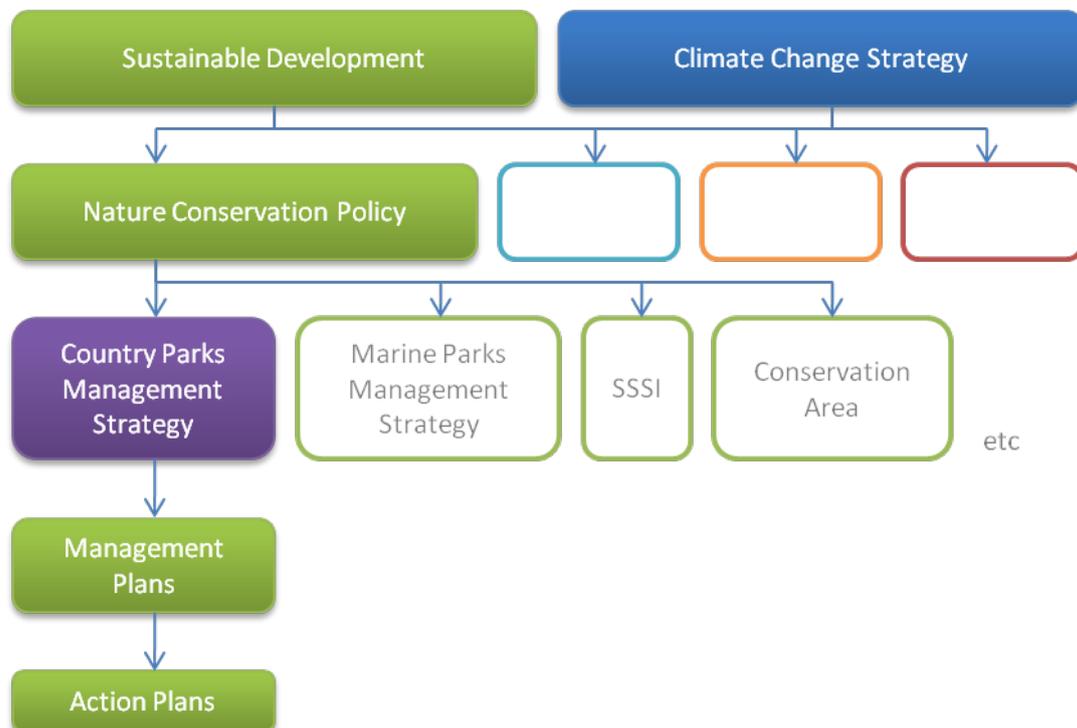
## International and Local Contexts

An overarching vision for the country parks network would help to highlight its present value, and articulate future prospects for the parks network – to guide efforts to maintain, enhance or restore aspects that are perceived as valuable. To realise such a vision, goals and objectives at different management levels need to be designed to emulate and interpret it, and in turn, a list of priority actions to reflect it. A strategy document for park management can encapsulate these features and serve to guide park managers in their decision-making.

One important means of connecting goals and values of different stakeholders under a consistent and encompassing vision is through the alignment of policies: spatially, contextually and temporally. That is, international and local strategies for parks management should be integrated within a clear legislative and policy framework. This ought to include strategies for nature conservation, natural resource management, climate change adaptation, and others that relate to protected areas. Lastly, these strategies should inform current policies and bring to light future policy requirements.

From a local policy perspective, a strategy on the management of country parks, which this paper aims to contribute towards, should be created under a broader framework for nature conservation, while also being the starting point for management plans for individual or clusters of country parks, as indicated in Figure 2.

**Figure 2: Relationship between different policy documents**



## Strategic Priorities

### **1.1 Introduce the Sandford Principle as a conflict prevention instrument for managing uncertainty, and to extend the no-net-loss principle to country parks. This would serve as a guarantee that all policies must maintain the ecological integrity of the parks and safeguard against development considered to be of overriding public interest.**

Conflicts between the dual ambitions of ensuring nature conservation and public recreation have often pitted one stakeholder against another. These are likely to intensify, with climate change bringing forth unforeseen alterations to the environment. Needless to say, there is particular urgency for authorities to clarify its vision and goals for rural areas, such that priorities and restraints can be placed to safeguard the natural values that are found within the country parks network.

Protected area authorities in many developed countries have utilised preferential principles to guide decision-making, as a way to safeguard natural values, as well as to maintain or restore important ecosystem services that are essential for human and biodiversity functions. The UK National Park authorities have gone so far as to implement the Sandford principle<sup>55</sup>, which states that under irreconcilable circumstances, conservation must take priority over recreation. Such last-minute measures are an important parameter that recognizes the value and utility of natural areas, and should be implemented for the country parks context in Hong Kong, in curbing disputes that pertain to known areas of high ecological significance.

Akin to the Sandford principle is the notion of no-net-loss, which is currently applied to safeguard wetlands and fishponds from development in Deep Bay under the Town Planning Ordinance<sup>56</sup>. The recent SENT landfill controversy has led to suggestions that the no-net-loss principle should be extended to country parks and other protected areas in Hong Kong<sup>57</sup>.

The principle should be applied as a precondition for developments within, and excision of, country park land, to form the basis of a compensation policy that ensures the no net loss of natural areas. Therefore, no net loss can be utilised as a check on future encroachment of country parks, as well as to defend its ecological integrity. However, to guarantee the latter, the dual criteria of no net loss of ecological area and function will need to be met. This invariably makes the principle more stringent than if the 'loss' was measured by hectares alone, and could safeguard against the destruction of mature ecosystems with complex hydrological and ecological linkages, being compensated by areas of inferior ecological functions.

However, the principle should be understood as a minimal safeguard against developments of overriding public interest, and must be carried out in conjunction with a broader plan to conserve more ecologically-significant areas, which may include further designating areas for protection (see Theme 2).

<sup>55</sup> Countryside Agency (2005), "National Park Management Plans – Guidance", *Countryside Agency Publication*, p.6, <[http://www.naturalengland.org.uk/Images/ca216-tcm2-31056\\_tcm6-3047.pdf](http://www.naturalengland.org.uk/Images/ca216-tcm2-31056_tcm6-3047.pdf)>, accessed on 15 October 2010.

<sup>56</sup> Town Planning Board (revised April 1999), "Guidelines for Application for Developments within Deep Bay Area under Section 16 of the Town Planning Ordinance, TPB PG-NO.12B", <[http://www.info.gov.hk/tpb/en/forms/Guidelines/pg12b\\_e.pdf](http://www.info.gov.hk/tpb/en/forms/Guidelines/pg12b_e.pdf)>, accessed on 16 June 2011.

<sup>57</sup> World Wide Fund for Nature (2009), "Progress of implementation of the new nature conservation policy", LegCo Panel on Environmental Affairs, meeting on 30 March 2009, <<http://www.legco.gov.hk/yr08-09/english/panels/ea/papers/ea0330cb1-1220-3-e.pdf>>, accessed on 16 November 2010.

## 1.2 Apply the principles and practices of the Convention on Biological Diversity (CBD) in a revised policy framework for nature conservation.

On 9<sup>th</sup> May 2011, the CBD was formally extended to Hong Kong, which marks the fruition of the SAR government's long-held intention to apply the "principles" of the convention locally<sup>58</sup>. With the CBD extension, many green groups now hope that nature conservation will be given its due legitimacy<sup>59</sup>. It has been argued that what Hong Kong needs, but has yet to implement, is a nature conservation policy framework that outlines clear conservation goals, is applied cross-bureau<sup>60</sup>, and follows the principles and practices of the CBD<sup>61,62</sup>. While the New Nature Conservation Policy<sup>63</sup> that was devised in 2004 included the promise of new partnership arrangement with non-governmental bodies for conservation of priority sites, many of these areas remain unmanaged<sup>64</sup>, and thus vulnerable to threats. Protection of these areas of high ecological value, together with the 50 Country Park enclaves that was promised protection in the 2010-11 Policy Address<sup>65</sup>, are important in contributing to a biodiversity corridor network in Hong Kong. Yet, progress has been slow, encumbering the prevention of environmental destruction with the lack of further designation and management. It is argued that the existing New Nature Conservation Policy needs to be overhauled and redrafted in accordance with the best practices espoused under the CBD<sup>66</sup>.

## 1.3 Utilise the IUCN Guidelines for Applying Protected Area Management Categories for Hong Kong's country parks network, in order to assign differentiated management objectives for diverse areas.

The IUCN Protected Area Management Categories are an internationally recognised framework. Therefore, application of the categories can permit the management of protected areas to be made comparable against international benchmarks. Therefore, applying the categories, and having a consistent classification for the entire country parks network, is particularly useful for reporting purposes.

One of the advantages of utilising the IUCN categories for protected areas is that each category represents a different management objective, so that the process of applying the IUCN categories can serve to empower management authorities with a strategic direction in which to develop more detailed operational goals that is consistent with the objectives of the category chosen.

Applying the IUCN categories to Hong Kong's country parks may allow different areas of the park to be managed in a differentiated manner. Much of Hong Kong's country parks have been considered

<sup>58</sup> Note 17.

<sup>59</sup> Civic Exchange (26 May 2011), "Joint Statement to the Hong Kong SAR government on the establishment of a Nature Conservation Framework for Hong Kong based on the Convention on Biological Diversity", <[http://www.civic-exchange.org/wp/wp-content/uploads/2011/04/envNGO\\_JointStatement.pdf](http://www.civic-exchange.org/wp/wp-content/uploads/2011/04/envNGO_JointStatement.pdf)>, accessed on 15 June 2011.

<sup>60</sup> World Wide Fund for Nature (2010), WWF's Recommendations for the 2010-2011 Policy Address, <[http://assets.wwf.hk.panda.org/downloads/wwf\\_s\\_recommendations\\_for\\_2010\\_2011\\_policy\\_address\\_eng.pdf](http://assets.wwf.hk.panda.org/downloads/wwf_s_recommendations_for_2010_2011_policy_address_eng.pdf)>, accessed on 11 November 2010.

<sup>61</sup> For example: Kilburn, M., Kendrick, R. (2011), "Nature Conservation: a new policy framework for Hong Kong", Civic Exchange, Hong Kong.

<sup>62</sup> The CBD has established a Programme of Work on Protected Areas, which is intended to assist national governments in the development of national Programme of Work, by providing tools and best practices from which the local governments could draw from in translating international goals into local agenda. Elements of the CBD Programme of Works are included in the discussion of themes and recommendations given in this paper, but have not been followed prescriptively. Assessment of the entire country parks network is the responsibility of government authorities, and should be conducted with the aid of the CBD Programme of Works and applying models of global best-practices, with the aim of building an effective governance structure in Hong Kong. See: Dudley, N., Mulongoy, K.J., Cohen, S., Stolton, S., Barber C.V., Gidda, S.B. (2005), "Towards Effective Protected Area Systems: An Action Guide to Implement the Convention on Biological Diversity Programme of Work on Protected Areas", Secretariat of the Convention on Biological Diversity, Montreal, Technical Series no. 18.

<sup>63</sup> Agriculture, Fisheries and Conservation Department (2004), "New Nature Conservation Policy", paper for the Legislative Council Panel on Environmental Issues, <[http://www.afcd.gov.hk/english/conservation/con\\_nncp/files/legco.pdf](http://www.afcd.gov.hk/english/conservation/con_nncp/files/legco.pdf)>, accessed on 24 November 2011.

<sup>64</sup> Only "Fung Yuen" and "Long Valley and Ho Sheung Heung", 2 of the 12 priority sites, have established management agreements where NGOs actively manage the sites; WWF (2009).

<sup>65</sup> HKSAR Government, 2010-2011 Policy Address, <<http://www.policyaddress.gov.hk/10-11/eng/p122.html>>, accessed on 1 December 2010.

<sup>66</sup> World Wide Fund for Nature Hong Kong (2010).

as Category IV (Habitat Species management area) and Category V (protected landscape/seascape) areas<sup>67</sup>, and if these categories were actively applied, it may allow zones, consistent with Talbot and Talbot's<sup>68</sup> zoning, to be applied to respond to species and habitat demands. For example, the natural succession of forest vegetation over high-altitude grassland is threatening the habitat of the Chinese Grassbird, a potentially endemic species of grassbird that is concentrated in grassy areas of Hong Kong's mountain peaks. Maintaining this habitat in Hong Kong's country parks is essential to their survival, and management from a species perspective could be developed by steering management objectives, and hence priorities, that is consistent with the IUCN categories.

Furthermore, a Category IV classification can help to incorporate contested areas outside the current boundaries of country parks under a broader regime of sustainable development and use, and hence reorient these areas as protected areas with nature conservation principles.

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<sup>67</sup> Note 23.

<sup>68</sup> Talbot, L. M., Talbot, M. H. (1965), *Conservation of the Hong Kong Countryside: Summary Report and Recommendation*, Hong Kong: Government Printer.

## Theme 2:

# Country Parks Design

Hong Kong's biological diversity is in decline<sup>69</sup>, and one important approach to ensuring the endurance of critical species habitats is through the allocation of protected areas. Country parks in Hong Kong were not initially designated for this purpose, but rather, as a way of developing the statutory protection of reservoir watersheds. When the Country Parks Ordinance came into effect, the dual notion of recreation and conservation became the key imperatives for park authorities. Thus, only after parks were designated did the managing for biodiversity become a priority. While park designation can defend against improper land use and development proposals within park boundaries, threats from fire, exotic species and the indeterminate threats from climate change cannot be properly addressed simply by assigning areas to be cordoned off from interference.

The AFCD has made a significant difference in managing for fire outbreaks over the years, and appears to have a systematic prevention and response procedure in place<sup>70</sup>. Yet, management effort in dealing with other threats is less evident. Protecting native biodiversity from these various threats requires a system of protected areas that allows the complex and dynamic processes of interactions in nature to persist. As a key instrument of in-situ conservation under the CBD, protected areas should be designed to enhance biodiversity and to maximise ecological resilience.

The IUCN's guide to the planning of protected areas system<sup>71</sup> states that designated areas should exhibit the following characteristics: representativeness, comprehensiveness and adequacy, amongst others<sup>72</sup>. Several national and regional authorities in other parts of the world have made it explicit that these characteristics should in fact be the end goal of protected area design<sup>73</sup>, although admittedly, definition and interpretations may differ.

The Australian classification of these terms<sup>74</sup> is particularly instructive for means of improving the national natural reserve system, by incorporating examples of regional ecosystems throughout its jurisdiction. They define the terms as thus:

- **Comprehensiveness:** including samples of a complete range of regional ecosystems (Australia has classified 85 bioregions and 403 subregions, based on climate, geology, landform native vegetation and species information)
- **Representativeness:** where ecosystem diversity is represented at a regional scale.
- **Adequacy:** refers to how much each ecosystem should be sampled to ensure ecological viability and resilience, both at the scale of individual protected areas, and for the protected areas system as a whole.

<sup>69</sup> Note 61.

<sup>70</sup> Leung, C.H., Senior Country Parks Officer, personal communications.

<sup>71</sup> Davey, A.G. (1998), *National System Planning for Protected Areas*, IUCN, Gland, Switzerland and Cambridge, UK.

<sup>72</sup> Other key characteristics include: coherence and complementarity; consistency; cost-effectiveness, efficiency and equity (Davey, 1998, p.13).

<sup>73</sup> Australia – National Reserve System Task Group (2009), "Australia's Strategy for the National Reserve System", *Australian Government Department of the Environment, Water, Heritage and the Arts*; New South Wales as a regional protected area management body - NSW National Parks and Wildlife Service (2008), "New South Wales National Parks Establishment Plan, Sydney", *Department of Environment and Climate Change NSW*; Canada – Parks Canada (2008), "Guide to Management Planning", <[www.pc.gc.ca/eng/pn-np/nt/aulavik/plan/~/\\_/media/docs/bib-lib/pdfs/pc\\_gmp2008\\_e.ashx](http://www.pc.gc.ca/eng/pn-np/nt/aulavik/plan/~/_/media/docs/bib-lib/pdfs/pc_gmp2008_e.ashx)>, accessed on 9 November 2010.

<sup>74</sup> Note 73, p.10.

The existing network of country parks do not represent the full breadth of biodiversity that exist in Hong Kong, as a result of the legacy of parks establishment that was centered on protecting the territory's water resources. To redesign protected areas, with a view of maximising the representation of biodiversity, as well as natural and cultural landscapes of significance, additional effort in conducting biodiversity surveys and research on ecological processes needs to take place, in order to account for the impacts of gradual and unanticipated change to the environment. The aim is to select areas for protection that are comprehensive, adequate and representative of Hong Kong's ecosystem.

### Strategic Priorities

#### **2.1 Apply the Aichi Biodiversity Targets, as part of an overarching effort to implement the CBD to Hong Kong's country park system, by ensuring that at least 17 percent of the network is ecologically representative samples.**

The recently conceived Aichi Biodiversity Targets<sup>75</sup>, which was formulated during the CBD COP10 meeting in Nagoya, produced new targets for its signatory parties on protected areas. Ratifying the CBD with the new targets means that Hong Kong will need to ensure that 17 percent of areas which are representative samples of terrestrial ecosystem are protected. As mentioned earlier, 42 percent of Hong Kong's land mass has been designated as country park, but much of this is in upland areas<sup>76</sup>, with lowland, streams and wetlands under-represented. Studies have also highlighted the consequences of the under-representation of certain habitats, a significant number of areas that were found to be biodiversity hotspots are in fact unprotected<sup>77</sup>. Therefore, authorities need to be mindful of Hong Kong's international responsibilities under the CBD, particularly when setting targets for park establishment, and place particular attention to increasing areas for protection in under-represented regions. The identification of these gaps in the country parks and protected areas network should utilize the best available science, and apply zoning and designation tools to guarantee their inclusion for protection.

#### **2.2 Link existing protected areas, as well as with cross-border territories of ecological importance, to strengthen ecosystem resilience via territorial and management coordination.**

As well as the country parks network, the Town Planning Ordinance provides several planning provisions to confer protection of areas from incompatible uses and development. These zoning tools, as delineated by the Outline Zoning Plan, allow ecologically significant or representative areas to be cordoned off, or allow only certain uses of the land such that biodiversity populations to be maintained (see Fig 3). However, a major deficiency of the planning instrument is that they are not accompanied by active management of the area, but act solely as a zoning measure to keep potential development threats out. The potential for these zones to act as wildlife refugia or buffer zones requires these areas to be 'managed' for conservation, not just overseen administratively. Where possible, they can be connected with the country parks system to minimise fragmentation of the protected areas network.

Importantly, wildlife corridors need to be broadened beyond the political-administrative confines of the territory. The last potential corridor for terrestrial movements of wildlife exists along the Frontier Closed Area, linking Hong Kong with the rest of China's natural habitats. The government's plans for a new country park in the Sha Tau Kok area does establish this vital corridor, particularly with

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<sup>75</sup> United Nations Environment Programme (UNEP), 'Aichi Biodiversity Targets', *Convention on Biological Diversity*, updated 16 February 2011, <<http://www.cbd.int/sp/targets/>>, accessed on 3 April 2011.

<sup>76</sup> Note 17.

<sup>77</sup> Note 23.

Shenzhen's 31km<sup>2</sup> Wutongshan National Forest Park<sup>78</sup>, especially for species depending on woodland/stream ecosystems. If ecological processes and ecosystem services are to be enhanced, then protection of areas needs to occur at scales larger than individual protected areas. Hong Kong's original vegetation cover was a semi-evergreen tropical rainforest, and was believed to stretch from Hainan in the south, to Siberia in the north, in an uninterrupted wildlife corridor<sup>79</sup>. While recreating this would pose an unrealistic challenge due to current human population densities, it highlights the importance of linking existing and potential species habitats for effective biodiversity conservation. It also highlights the role Hong Kong can play in conserving and restoring China's biodiversity.

**Figure 3: Types of Zoning under the Outline Zoning Plan<sup>80</sup>**

Type of Zoning	Zoning Provision	Actual Degree of Protection
Site of Special Scientific Interest (SSSI)	<ul style="list-style-type: none"> <li>- Lowers the threshold for development near SSSI site</li> <li>- Mandates that an ecological assessment forms part of the EIA</li> <li>- Mentioned in the Environmental Impact Assessment Ordinance (EIAO) 1997.</li> </ul>	<ul style="list-style-type: none"> <li>- When found within country parks, SSSIs can highlight areas of particular biological or geological importance.</li> <li>- Do not have 'allowable uses' listed – development must be consented by Town Planning Board. But "protection against unauthorized development, although obviously a good thing, is not necessarily enough to preserve the biodiversity of a site"<sup>81</sup>.</li> <li>- Limited management of SSSI sites are expected, e.g. in controlling for the weed <i>Mikania</i>.</li> </ul>
Conservation Area (CA)	Sites at Sheung Wo Hang (rich in <i>feng shui</i> woodlands) and Luk Keng (HK's largest and most important freshwater marsh) were designated as CA, rather than SSSI, because of objections by villagers and others.	Gives weaker protection than SSSI status – more allowable uses are listed for CA than SSSI, incl. agriculture and tree planting; even if these activities could destroy the conservation value of these sites, esp. wetland habitats.
Coastal Protection Area	Intended to retain natural coastline <ul style="list-style-type: none"> <li>- Lowers the threshold for triggering EIA for marine development</li> </ul>	A wide range of land uses are always permitted.
Green Belts	Intended to retain existing natural features and rural uses <ul style="list-style-type: none"> <li>- Not mentioned in the EIAO</li> </ul>	But offer even weaker protection: developers can request to have the area rezoned for a more permissive category for development.

<sup>78</sup> Advisory Council on the Environment (2010), "Framework Agreement on Hong Kong/Guangdong Co-operation: Environmental Protection and Ecology Conservation", *Environmental Protection Department*, ACE Paper 10/2010, [http://www.epd.gov.hk/epd/english/boards/advisory\\_council/files/ACE\\_Paper\\_10\\_2010.pdf](http://www.epd.gov.hk/epd/english/boards/advisory_council/files/ACE_Paper_10_2010.pdf), accessed on 5 June 2011.

<sup>79</sup> Jim, C.Y. (2003), "Conservation of soils in culturally protected woodlands in rural Hong Kong", *Forest Ecology and Management*, Vol. 175, issue 1-3, pp.339-353.

<sup>80</sup> Note 17.

<sup>81</sup> Ibid.

# Theme 3:

## Country Parks Planning and Management

While a well-designed parks network provides the capacity for nature conservation to take place, it does not necessarily equate to adequate protection of biodiversity or ecosystem services. Such a safeguard can only be realised if it is accompanied with active management of these protected areas.

Management not only needs to be secure and robust, but should also be adaptive to changing conditions, such as a shifting climate regime. Adaptive management has been adopted by numerous protected area authorities worldwide as a means to exhibit a flexible and effective response to emerging threats, as consistent with an ecosystem approach<sup>82</sup>.

South Africa's national parks network (SANParks), for example, adopted an adaptive management framework in 1996 for the management of its national parks<sup>83</sup>. To illustrate the move towards an ecosystem approach, i.e. to characterize a nature in flux rather than in balance, SANParks had modified its conservation goals to maintain spatial and temporal heterogeneity rather than specific population sizes or landscapes<sup>84</sup>. Hence, management had deviated from been reactive, conflict-driven, to one that was consensus-based and learning-oriented<sup>85</sup>.

Hong Kong's country parks network can benefit from the adoption of an adaptive management framework based on international best practices. While many of the threats that confront country park managers are concerned with inhibiting damaging land uses, there are a host of others that require active management by park authorities, such as hill fires, invasive non-native species, and climate change. Conventional approaches, such as a 'fences and fines' regime, can do little to alleviate these threats, and that an adaptive management approach that sets the direction but allows flexibility<sup>86</sup> is vital for management response to be effective.

### Strategic Priorities

#### **3.1 Formalise the regular publication of management plans, as a way to harmonise the vision and goals of the country parks network with public aspirations.**

Park systems without a management plan can often mean that management becomes haphazard, privy to political pressures, as well as being conservative and inflexible<sup>87</sup>. In such cases, the effectiveness of park management may seem ambiguous and doubtful to stakeholders, which accentuates the need for a mechanism that communicates management objectives, plans and outcomes to the wider public. A published management plan that is accessible to the public can outline these management components. This has been an important feature of worldwide park authorities in guaranteeing transparency and accountability, which is seen as a public contract of the

<sup>82</sup> Refer to break-out box on the 'ecosystem approach' in comparison to earlier approaches.

<sup>83</sup> Pollard, S.R., du Toit, D.R. (2005), "Recognizing heterogeneity and variability as key characteristics of savannah systems: The use of Strategic Adaptive Management as an approach to river management within the Kruger National Park, South Africa". Report of UNEP/GEF Project No. GF/2713-03-4679: Ecosystems, Protected Areas and People Project.

<sup>84</sup> Note 32, p.173.

<sup>85</sup> Note 83.

<sup>86</sup> Ibid.

<sup>87</sup> Thomas, L., Middleton, J. (2003), *Guidelines for Management Planning of Protected Areas*, IUCN Gland, Switzerland and Cambridge, UK, p.9.

government authority with its public constituency. Utilising management plans to this end can help counteract criticisms about perceived management inadequacies, as published plans provide the chance for sincere clarification, including resource or budgetary constraints, to be disclosed.

Like other park authorities around the world, the AFCD is faced with resource constraints that may place limits on the degree of activities that can be implemented. Essential works on nature conservation and recreational facilities can easily get sidestepped when budget allocations fall short of enabling sufficient manpower and other resources for the attainment of conservation and recreational goals. Public pressure plays a significant role in the government's budget allocation process, but the public also needs to have relevant and concise information about the country parks network in order to make an informed contribution.

Although the establishment of management plans requires resources for its development, it is also an effective channel for which government actions, strategies and directions are conveyed. Therefore, it is recommended that management plans should be published, reviewed and revised regularly, as a starting point for the involvement of stakeholders into the realm of managing country parks in a collaborative manner. While it is often a statutory obligation for other park authorities to create management plans, no such obligation exist under the Country Parks Ordinance, although this should not stop Hong Kong's park authorities from formulating such a plan.

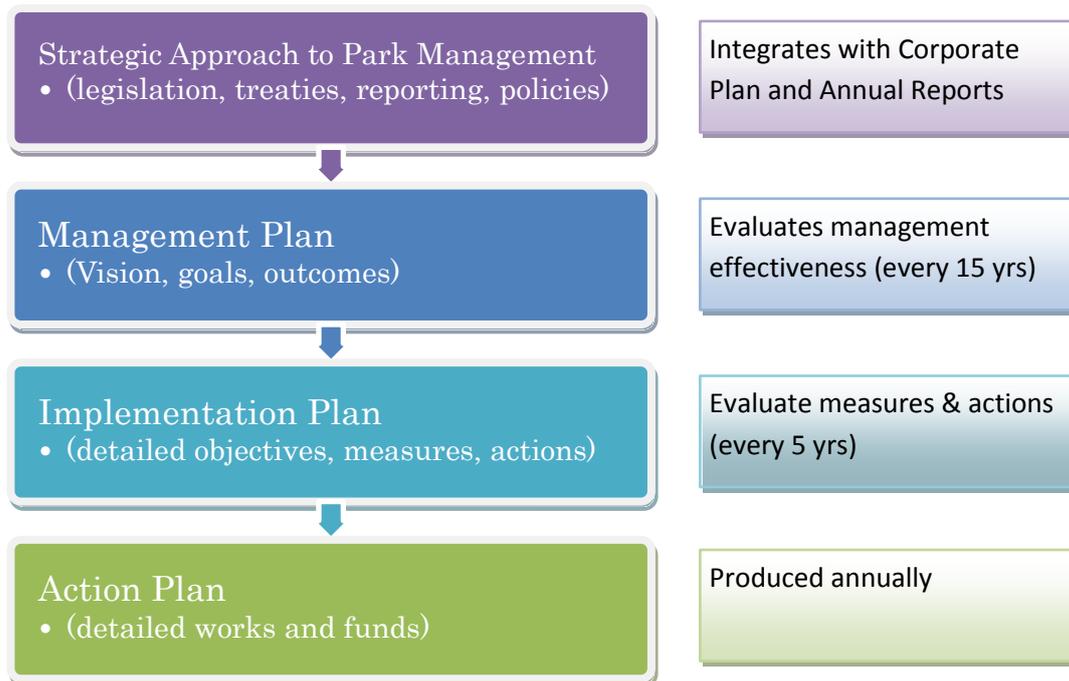
Management plans are essentially a documented guide by which management authorities sets out the resources available, uses, facilities and personnel needs for managing an area in the future<sup>88</sup>. It is frequently described as a working document, highlighting that activities undertaken are works in progress, with a tendency to be modified over time<sup>89</sup>. One primary benefit then of establishing management plans is that it acts as a guide for managers through the articulation of a long term vision for the parks system, and the management directives to get there. It helps to resolve conflict, address risks, and removes uncertainty when management objectives are devised.

*wePlan Victoria*, a state-level parks authority in Australia, have developed a tiered planning framework that provide a useful structure for management plans to be developed at different levels of park management (see Fig 4). This approach is designed to clearly allocate planning effort, and ensures regular management evaluations of progress through the plan formulating process, and could be a beneficial framework for Hong Kong's management authorities to adopt. Currently, a quarterly works report is produced by the AFCD, which operates like an Action Plan document (from Fig 4). As well, there is an AFCD departmental business plan which is reviewed annually, and can be complementary with the Strategic Approach to Park Management document (from Fig 4). However, there are gaps in the Hong Kong planning process, highlighted by the lack of Management Plan and Operational Plan, which suggests that visions, goals, and management objectives are not being developed, and that there are few indicators and no formal process to evaluate the success, or otherwise, of management action. For example, an operation plan and associated evaluation reporting should assess the extent to which management actions have achieved targeted outcomes of comprehensiveness, adequacy, and representativeness.

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<sup>88</sup> Note 87, p.6.

<sup>89</sup> Note 87, p.7.

**Figure 4: wePlan Victoria's Planning Framework<sup>90</sup>**

### 3.2 Commit to a system of acquisition and transfer of latest scientific knowledge into the design of operational goals, and a management effectiveness auditing system for adaptive management.

As country parks management is only one part of the various responsibilities of the AFCD, it is not surprising that the department is partitioned into several divisions, each accountable for a different focus of management. Hence, aspects of parks management may be overseen by the country parks division, but also contributed to by the biodiversity conservation and the endangered species protection divisions, amongst others. Such dissection of roles allows different aspects of park management to be catered for, but can also render management to be fragmented, disciplinary and departmental<sup>91</sup>. Therefore, good communication and knowledge exchange between these divisions is essential for overall management of the country parks to be effective. Threats to biodiversity from a changing climate, whether unknown or identified, will create a need for new types of information<sup>92</sup>, acquired and implemented on a continuous basis. Such threats emphasise the pivotal role of knowledge acquisition and transfer within and between departments, and that formally integrating them into the planning processes is important to ensure that management is conducted with best available data.

What is emphasised by researchers and park managers elsewhere is the importance of the interface between scientific knowledge and ecology management – science should operate as a ‘feed-on’ for management’s problem definition and in improving the policy framework, with management observations and outcomes concurrently ‘feeding back’ on scientific theory<sup>93</sup>. Yet, both streams of interaction can have a tendency to go awry.

<sup>90</sup> Source: <http://www.weplan.parks.vic.gov.au/node/962>

<sup>91</sup> Note 39.

<sup>92</sup> Note 73.

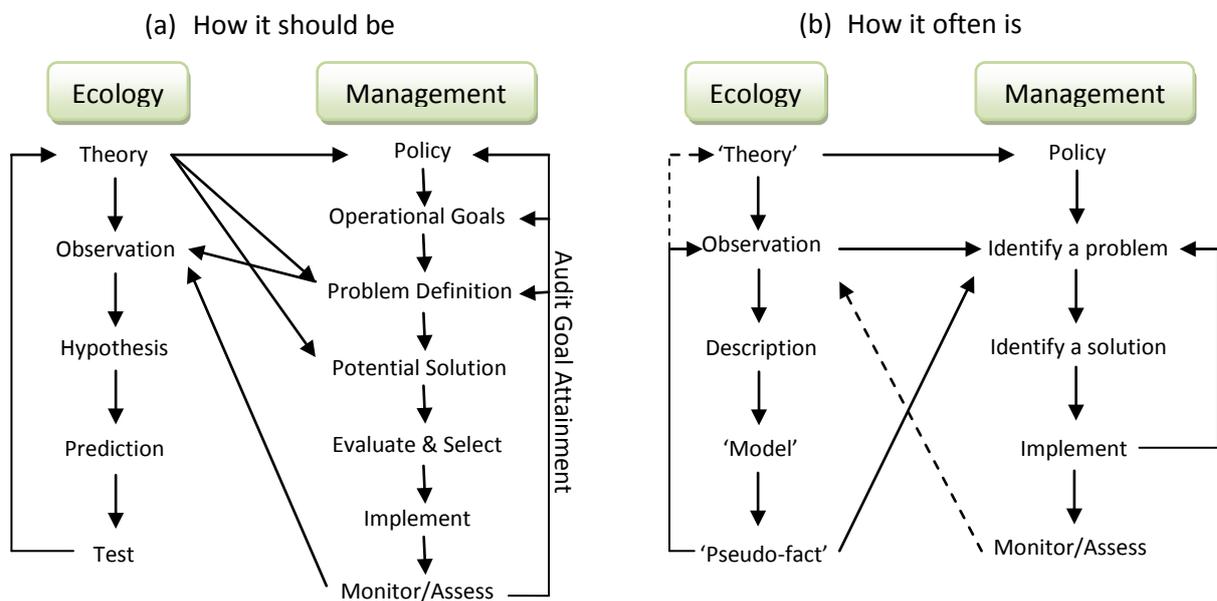
<sup>93</sup> Rogers, K., Biggs, H. (1999), “Integrating indicators, endpoints and value systems in strategic management of the rivers of the Kruger National Park”, *Freshwater Biology*, Vol. 41, pp.439-451.

Figure 5 illustrates how science and management can interact. An inefficient system tends to interpret science as facts (pseudo-facts) to be applied unequivocally, being treated as set and inflexible, rather than as a hypothesis to be tested under the conditions of the local context<sup>94</sup>. Management outcomes need to provide feedbacks to inform how applicable the science was, and how it should be modified as appropriate.

A primary task of management is to translate policy into operational goals. However, if the process of translation is not filtered with the best available science, and lacks an auditing procedure to identify the management effectiveness behind the outcome, then management actions have a tendency to lack direction, purpose and transparency<sup>95</sup>. This could lead to management being highly reactive, and constantly surprised by nature's variations, economic coercions and social adjustments.

The extent to which management actions of the AFCD are monitored, audited and filtered back to revise operational goals is unclear, as there are no publicly accessible management plans for Hong Kong's country parks network where such information is usually conveyed. An efficient monitoring and auditing system should be in place, to effectively test management actions against societal value systems and scientific understanding. Monitoring and management should include comprehensive biological surveys, values assessment, ecosystem mapping, and related information to support systematic parks management planning<sup>96</sup>.

**Figure 5: Interaction between science of ecology and environmental management<sup>97</sup>**



<sup>94</sup> Holling, C.S. (1998), "Two cultures of ecology", *Conservation Ecology*, Vol. 2, No. 2, p.4, <http://www.consecol.org/vol2/iss2/art4/>

<sup>95</sup> Note 93.

<sup>96</sup> Note 73, p.57.

<sup>97</sup> Note 93, p.441.

### 3.3 Implement a stakeholder-led and scientifically rigorous approach to defining acceptable 'desired states' and 'thresholds of potential concern', as a way of linking management targets with monitoring and auditing efforts.

Other strategic priorities have already mentioned the need for a set of vision, goals, and operational objectives to be consistently outlined, but what many park management authorities utilise to define them is the use of 'desired states'. Desired states can be represented by human values, or identified using scientific endpoints. What has been advantageous is when both value systems and scientific principles are integrated, in conjunction with a process of structuring an objectives hierarchy for different levels of management<sup>98</sup>.

As Fig. 4 indicates, higher levels of a planning framework may set out the strategic intent using overarching visions and goals for the parks system, and should be devised with the involvement of stakeholders. These goals and objectives subsequently provide managers and field staff at the operational level with targets based on ecosystem conditions<sup>99</sup>, which should be both scientifically rigorous but also be compatible with the vision for the parks system. These targets are known as Threshold of Potential Concern (TPCs), which functions as an early warning mechanism to caution managers of undesirable change to the environment. However, they are developed with the view that a nature that is constantly in flux requires a responsive alarm that triggers when the change has gone too far; but nevertheless allows ecosystem change and natural succession to occur. TPCs are essentially the upper and lower limits of change for environmental or biodiversity indicators<sup>100</sup>, providing the limits of acceptable change in ecosystem structure and function, and a warning of when it is in danger of being exceeded. E.g. the absence of a species of butterflies in three consecutive surveys can be a cause for concern, and thus classified as a TPC.

TPCs should be modified with better understanding and experience, to ensure that it remains valid and suitable. When TPCs are triggered, managers will need to assess the cause and extent of change, and identify appropriate management action, or to adjust the TPCs if needed<sup>101</sup>. Hence, TPCs are useful indicators and can assist managers in the monitoring of ecosystem change over time, and can be enhanced with active stakeholder involvement in setting the extent of change that is tolerable. Such a development is useful for Hong Kong, as a way of instituting a system of scientific hypothesis testing, as well as to act as a mechanism to feedback information for the auditing of targets and goals attainment.

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<sup>98</sup> Rogers, K.H., Bestbier, R. (1997), *Development of a Protocol for the Definition of the Desired State of Riverine Systems in South Africa*, Department of Environmental Affairs and Tourism, Pretoria.

<sup>99</sup> Note 93, p.443.

<sup>100</sup> Biggs, H.C., Rogers, K.H. (2003), "An Adaptive System to Link Science, Monitoring, and Management in Practice", in Du Toit, J., Biggs, H., Rogers, K.H., eds., *The Kruger Experience: Ecology and Management of Savanna Heterogeneity*, Johannesburg: Island Press.

<sup>101</sup> Note 100.

## Theme 4:

# Strengthening Partnership and Community Support

One of the primary difficulties of the AFCD in fulfilling the nature conservation mandate is that many of the sites of ecological value are found in private land, and that attempts to meddle with the use and management of the land are perceived as interference, or worse, as infringement of private property rights. In fact, one of the biggest hurdles to country park establishment in the past has been opposition by different community groups. This places government authorities in a bind, because environmental degradation tends to be most pronounced within private lands, therefore stressing the importance of intervention when the land in question is environmentally-sensitive. As well, commentators have suggested that pocket areas of ecological significance, particularly ones adjoined to the borders of country parks, should be subsumed by park authorities to ensure that the area is protected through management<sup>102</sup>. Since the land value in Hong Kong is high, land resumption as a conservation strategy is limited in practice; government authorities must work with private landowners to achieve its conservation aims for the countryside.

As mentioned earlier, besides parks establishment, the Outline Zoning Plans are the primary tool through which the Hong Kong government can curb misuse and environmental degradation of ecologically-sensitive sites. While these provisions can be effective in mitigating damage, they do little in terms of eliciting the backing and assistance of the community in working towards ecological sustainability. This is because they are restrictive and punitive measures, which, unlike country parks, do not involve landowners and the local community to utilise the areas for light recreational use, which could arguably foster nature appreciation. It is argued that what is poorly developed or missing in Hong Kong's environmental laws, but are commonly found amongst other environmental jurisdictions of developed countries, are incentive measures and schemes that encourage conservation by the private individual or group<sup>103</sup>.

A recent scheme from the South China Morning Post (SCMP) exemplifies a latent enthusiasm by the broad community to participate in nature conservation. The CitizenMap<sup>104</sup>, which is designed to allow ordinary people to report cases of environmental degradation, such as illegal dumping or vegetation clearing, aims to involve the public in the monitoring process of country parks and other natural areas<sup>105</sup>. Examples such as this is undoubtedly a benefit to the AFCD as park managers, as it provides a pool of watchdogs over areas that the department does not always have the resources to oversee.

The CitizenMAP initiative provides a valuable example of how private individuals can be engaged into the realm of environmental monitoring. It also highlights the lack of an effective dialogue mechanism between park managers and communities, addressed only by the SCMP as a non-governmental intermediary. There is much evidence that effective management of protected areas require a highly participatory process<sup>106</sup>, and that a mix of regulation, incentive, and awareness should be fashioned to facilitate the engagement and support of the community.

<sup>102</sup> Note 17.

<sup>103</sup> Tung, C. (2002), "Strengthening the Hong Kong Conservation Trust Regime", *Hong Kong Lawyer*, September, <[http://www.hk-lawyer.com/InnerPages\\_features/0/889/2002/9?page=1](http://www.hk-lawyer.com/InnerPages_features/0/889/2002/9?page=1)>, accessed on 10 December 2010.

<sup>104</sup> See: <http://citizenmap.scmp.com/>

<sup>105</sup> Note 44.

<sup>106</sup> Werner, M. (1997), "Consensus' participation: an example for protected areas planning", *Public Administration and Development*, Vol. 17, pp.413-432.

Public consultation in Hong Kong has gained only modest ground in recent years, with the Council of Sustainable Development providing a rare example of community engagement in their consultations on renewable energy and waste management<sup>107</sup>. Yet, the management of country parks, and of natural areas in general, can benefit from extensive stakeholder engagement, to capture the divergent agenda of various stakeholders, including vulnerable or affected groups such as private landholders in ecologically sensitive areas. A participatory process can help to eliminate disputes or at least to increase understanding of situations where a stakeholder's priorities are traded-off for another<sup>108</sup>. It is also an essential first step towards assessing the cost and benefit of protected areas and quantifying its shared value, setting in motion the vital harmonization of access and benefit sharing arrangements.

## **Strategic Priorities**

### **4.1 Experiment with bold and innovative forms of engagement with stakeholders, through a conservation trust model, to break through the impasse with communities.**

Hong Kong currently has an Environment and Conservation Fund, which invites individuals and societal groups to apply for grants that concern environmental education and research, as well as other related activities<sup>109</sup>. Yet, it has been suggested that what Hong Kong needs is a centralised trust for nature conservation, and could be realised by widening the scope of the Environment and Conservation Fund that already exists<sup>110</sup>. The primary benefit of trusts is that it takes a multi-stakeholder approach, including developers and community members, but does not unduly favour any one party. It has been proposed that the programs created under the New Nature Conservation Policy, namely the Public-Private Partnership (PPP) and Management Agreement (MA) can be better delivered under the direction of a nature conservation trust. In this case, the Trust can help to coordinate management work on ecological priority sites with interested stakeholders, including the private enterprise or community groups, and may involve the pooling of funds from different parties<sup>111</sup>. Such modifications to the PPP and MA are practicable and urgently needed, as the programs were designed to address the conservation concerns of the 12 priority sites of ecological significance, yet to date less than 2% of the land covered by the 12 sites is under active management, only two have obtained protection<sup>112</sup>, and the rest are at risk of environmental degradation from under-management<sup>113</sup>.

While these concern sites outside of country parks, allowing trusts to operate in areas within the parks network could allow conservation activities that are currently overlooked, but equally urgent, such as monitoring or environmental restoration activities. This could help to overcome the budgetary constraints that the AFCD currently experiences, and may act to coerce the Treasury departments into apportioning greater funds towards park conservation, if an agreed percentage of joint funding can be agreed upon by the trust and the government.

Conservation funds in other parts of the world have included novel and innovative schemes to address the need for management in unprotected areas, with the use of incentives rather than penalising measures. Conservation easements are agreements between the landowner and a conservation

<sup>107</sup> See: Hong Kong SAR Government, *Council for Sustainable Development*, updated 1 March 2011, <<http://www.susdev.gov.hk/html/en/council/index.htm>>, accessed on 15 May 2011.

<sup>108</sup> Grimble, R., Wellard, K. (1997), "Stakeholder Methodologies in Natural Resource Management: a review of principles, contexts, experiences and opportunities", *Agricultural Systems*, Vol. 55, no. 2, pp.173-193.

<sup>109</sup> Environment and Conservation Fund Ordinance, Cap. 450, s.4.

<sup>110</sup> Note 103.

<sup>111</sup> World Wide Fund for Nature (2008), "Progress of implementation of the new nature conservation policy", Legco Panel on Environmental Affairs, Meeting on 28 April, 2008, <<http://www.legco.gov.hk/yr07-08/english/panels/ea/papers/ea0428cb1-1401-2-e.pdf>>, accessed on 15 December 2010.

<sup>112</sup> Note 43, p.9.

<sup>113</sup> Note 111.

organisation, where the landowner agrees to restrict the use of its property in return for monetary compensation<sup>114</sup>. This arrangement is practiced by the Nature Conservation Trust of New South Wales<sup>115</sup>, Australia, where the trust has the right to monitor the land to assess whether the restrictions on use are met. Other trust regimes have the power to acquire land using its own funds. This is particularly useful in Hong Kong, as some of the worst environmental degradation and pollution in Hong Kong occur on private land, and that converting them into conservation areas in such cases could be extremely favourable<sup>116</sup>.

#### **4.2 Develop a communication strategy and participation measures, targeted at key stakeholders and the general public to increase understanding of the underlying principles, goals, and benefits of the country parks system.**

For a parks network to succeed in its key objectives of biodiversity conservation and encouraging sustainable land use practices, the support and involvement of the wider community is essential. To achieve this will require tackling the usual pitfalls that have crippled sustainable development in rural Hong Kong. Essentially this means that the perception of a government that favours the developer ahead of the 'voice' of local people must be addressed before the trust and backing of ordinary citizens can be genuinely co-opted. 'Learning' is an essential concept that should underpin an adaptive management regime. Learning processes between stakeholders elicits each actor's involvement, encouraging collective and continuous sense-making<sup>117</sup>, so that the competencies of local people can be accommodated. Forums for which broad stakeholders continuously debate, deliberate, and importantly learn, can help to reinforce the benefits that the parks network could bring, and the value of protecting natural areas.

The Country and Marine Parks Board (CMPB) is one arena in which park developments, policies and strategies are discussed, albeit limited to official (government) and appointed non-official (stakeholders) members. Memberships, however, are designated by the park authority (i.e. AFCD). For a start, representatives from the community should be invited to join, not just to observe, CMPB meetings. While the Board has a mechanism for objections from the community to be heard, this is an insufficient substitute for genuine public participation, which is vital for building trust and support from the wider community.

A broadly targeted communication strategy that specifies country park goals and vision can help to clarify the relationship between the community and country parks, which may ultimately assist park managers in balancing conservation and recreation priorities. A related task is the need to identify the costs and benefits of protected areas to local communities, including the valuation of ecosystem services<sup>118</sup>, as well as the economic value of carbon mitigation. Explaining the provision of economic and cultural benefits can be an effective adjunct to the promotion of ecological value of the park system, and essential to garnering the support of local communities.

<sup>114</sup> Note 103.

<sup>115</sup> See: <http://nct.org.au/>

<sup>116</sup> Figgis, P. (2004), *Conservation on Private Lands: the Australian Experience*, IUCN, Gland, Switzerland and Cambridge, UK.

<sup>117</sup> Schusler, T.M., Decker, D.J., Pfeffer, M.J. (2003), "Social learning for collaborative natural resource management", *Society and Natural Resources*, Vol. 15, pp.309–326.

<sup>118</sup> Note 73, p.60.

# Looking Forward

The purpose of this paper was to assess the state of country park management, and to provide suggestions and guidance for their improvement. International best practices and approaches were discussed for their applicability to Hong Kong, and are summarised in Fig 6.

Figure 6: Summary of Thematic areas

Thematic Areas	Strategy	Goals and Operational Objectives
1. International and Local Contexts	Establish a greater ecological sustainability focus	<ul style="list-style-type: none"> <li>Principles of CBD</li> <li>IUCN Categories</li> <li>Applying the Sandford Principle</li> </ul>
2. Country Parks Design	Redesigning the country parks network with a comprehensive, representative and adequate criteria	<ul style="list-style-type: none"> <li>Setting local targets based on Aichi Targets</li> <li>Create biodiversity corridors</li> </ul>
3. Country Parks Planning and Management	Managing for change and uncertainty	<ul style="list-style-type: none"> <li>Routinise the regular development of management plans</li> <li>Systematise the science/management interface</li> <li>Monitor and audit the state of management effectiveness</li> </ul>
4. Strengthening Partnerships and Community Support	Elicit the passion and enlist partners from the community for involvement in supporting country park values	<ul style="list-style-type: none"> <li>Soliciting greater stakeholder-wide involvement in park planning and management using innovative measures such as conservation trusts</li> <li>Communication strategy to convey management objectives and achievements</li> </ul>

The core recommendation is for a shift towards adaptive governance, which requires a fundamental change to the culture of management of natural resources, institutional frameworks, as well as to invite new ways of learning and incorporation of such knowledge into planning and policy<sup>119</sup>. Undertaking this shift is by no means easy, as these factors are often in stalemate, and are impeded by institutional inertia that prevents fundamental management change.

One avenue is through the Country and Marine Parks Board (CMPB), which should have a stronger role in reframing management strategy and compelling institutional change. The terms of reference<sup>120</sup> do not currently empower the CMPB to advise the AFCD on strategic directions, such as a proposal for the authority to develop a more adaptive approach to managing the country parks network. Yet, as an advisory body, it should be within its remit to make such proposals.

The purpose of this exploration was not to plot the pathways to change, but to initiate a conversation about the role of the country parks network, and what should be done to better reflect its value locally and internationally. It is envisioned that greater involvement of the community and other stakeholders, whether in debating about policy and planning, or in taking management action, could be vastly beneficial to the country parks network environmentally, socially and economically. Such a vision of open decision-making would not only benefit existing global benchmarks, but render Hong Kong as an ecological trail blazer on the international stage.

<sup>119</sup> Allan, C., Curtis, A. (2005), "Nipped in the bud: why regional scale adaptive management is not blooming", *Environmental Management*, Vol. 36, no. 3, pp.414-425.

<sup>120</sup> Agriculture, Fisheries and Conservation Department, "Membership and Terms of Reference of the Country and Marine Parks Board", updated 1 March, 2011, <[http://www.afcd.gov.hk/english/aboutus/abt\\_adv/abt\\_adv\\_b.html](http://www.afcd.gov.hk/english/aboutus/abt_adv/abt_adv_b.html)>, accessed on 4 May 2011.



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