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# Taipei 101: Tall Building Operation Towards Sustainability

## 台北101大楼: 向可持续化迈进的高层建筑管理



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Cathy Yang has over 25 years of experience in the real estate industry. She started working for TAIPEI 101- former world's tallest building – since 1999 when the project just started construction. Her responsibility has been to operate and manage this tower, including the office and the observatory. In the past few years, Cathy has been to many international conferences to share her experiences in operating a landmark tower and in turning TAIPEI 101 into the tallest green building in the world.

杨文琪有超过25年房地产相关工作经验，她从1999年即开始在台北101工作，当时这座前世界第一高楼正要开始施工。她的职责是负责这栋地标大楼（包括办公室及观景台）的营运管理。在过去数年，她参与众多国际会议介绍台北101并分享她管理这栋大楼及将它变身为世界最高绿建筑的经验。

### Abstract

To take TAIPEI 101 TOWER as an example that will showcase the various aspects of managing a tall building, satisfying tenant requirements, stakeholders expectations, and as an example of a cities' achievements.

- Explore the essential elements for the successful operation of tall buildings: 1) Safety; 2) Occupancy ratio and financial returns; 3) Service and maintenance;
- By leading the world in the fields of: 1) Green building movement; 2) Communication with society; 3) Social benefit and contribution to charities;
- In the longer term: 1) Financial return to investors through effective budgeting; 2) Sustainable development.

Tall buildings have many functions and stakeholders. Tall building owners should run their buildings with a sense of public benefit and social responsibility, aiming to achieve sustainability for their investment and for their building that will be part of the city skyline for a very long time.

**Keywords: Stakeholders, Occupancy Ratio, Sustainability, Green Building**

### 摘要

以台北101大楼经验印证管理超高层建筑的诸多面向，从满足租户要求、满足利害关系人期待，到作为城市象征。

- 探讨成功经营超高层建筑的基本要素: 1)安全; 2)营运收益; 3)服务及维护。
- 引领风潮: 1)绿色建筑运动; 2)与社会对话; 3)公益及慈善议题。
- 追求长期性: 1)财务规划; 2)可持续性。

超高层建筑有多重功能及多样的利害关系人，故其业主在经营之余应兼顾公众利益及社会责任，因而能让其塑造城市天际线的建筑达到可持续性。

**关键词: 利害关系人，出租率，可持续性，绿色建筑**

### Why Cities Built Supertall Buildings

#### From Religion to City Competition

From long ago, building tall structures have been mankind's dream. In earlier centuries religion was a primary motivator and church steeples and structures were the tallest structures. However, since the industrial revolution, economic strength and capital accumulation has become the driving force. The new wave of globalization created competition among cities, the most obvious sign has been building supertall buildings. These structures have become the symbol of modernization and progress. As a consequence developing countries have invested in tall buildings to prove to the world that their city is in a new stage of development.

### TAIPEI 101 Development

TAIPEI 101 started in 1997 because Taipei city wanted to build an international financial

### 城市兴建超高层建筑的驱动力

#### 从宗教到城市竞争

自久远以来，兴建高层建筑一直是人类的梦想，在早期主要是宗教的理由，教堂是都市的最高建筑。工业革命后，经济力量及资本累积成为兴建高层建筑的驱动力；全球化浪潮开始后，各国城市竞争日益激烈，兴建超高层建筑成为城市竞争的最明显标记，超高层建筑成为城市现代化和城市进步的象征。因此，开发中国家更热衷兴建超高层建筑，为了向世界证明他们的城市已进入另一个阶段。

### 台北101的兴建

1997年，台北市政府希望兴建一座国际金融中心，而将三个地块组合成一个大型基地，广邀台湾主要财团参与投标，而市府只提供七十年使用权，得标者投资兴建营运七十年后交还整个项目给台北市政府。在规划设计过程逐步发展而决定兴建当时的世界最高建筑，也是第一栋超越500米的

center. So it assembled three parcels of land and invited business groups to bid for the development right for 70 years while the city government retained the land ownership. The bid winner would invest, develop and operate (Build-Operate-Transfer project) for 70 years then return everything on site to the city. In the design development process, the project became a competition for the tallest tower, and it was the first to surpass the 500 meter mark. Taipei was not only building a financial center but a city landmark (see Figure 1). For historical reasons, Taipei was not a world famous city. The slogan at the time was “Bringing Taipei to the world and bringing the world to Taipei”. The motive was to make Taipei more known to the world. Today many supertall projects in various cities have the same ambition.

In this age of abundant capital, it is not difficult to raise funds to build supertall buildings. Advanced design and engineering technology also makes construction less difficult. The real difficulty is in the operation phase when construction ends.

Using TAIPEI 101 as example, this paper will explore the basics to be a successful supertall project; the expectation for supertall to be the leader among buildings in cities; and the need for supertall buildings to pursue social responsibility and achieve sustainability.

Basics of Successful Operation

When investors make the decision to place heavy capital resources to build supertall structures, they must have the determination to make it a perfect building and a big success. After all the hard work to finish construction of the building, the following aspects then need to be implemented to achieve ongoing success.

Safety First

Any building would claim to put safety as a priority. But for supertall buildings, it is of utmost and uncompromising importance. Fire safety especially would not allow any possibility of infringement. The number of occupiers and the impact to society should any incident occur, would carry a much more serious consequence. Therefore the design, construction, commissioning and operation all need to be carried out with the highest standard and execution. Residential high-rise blocks are of particular concern as no one is able to monitor and control the cooking needs of all residents. All fire related equipment and systems must be examined, tested and maintained regularly and properly.

Operating Return

Supertall buildings require large sums of investment and a longer construction period, hence the financial burden is much heavier and the payback period longer. Completion of construction means depreciation starts and the project begins its existence deep in debt. It is ideal if a supertall has a component that renders immediate revenue. TAIPEI 101 has three operating components, office, retail and observatory – which have proved to be a good model. Our shopping mall opened in Nov. 2003, one year ahead of the office tower. The observatory started operation in Jan. 2005. The first office tenant moved in April 2005 and at this point the office started generating revenue. However, the office tower took time to fill up and it took five years for TAIPEI 101 to reach 80% occupancy and provide a stable income stream to the investors. The whole project became profitable in the sixth year (see Table 1), and made up all previous losses in the ninth year.



Figure 1. Aerial view of TAIPEI 101 in the city (Source from TAIPEI 101)  
图1. 台北101在城市中的鸟瞰图 (来源: 台北101)

高楼。因此台北101不只是一座金融中心，更要盖一座城市地标（请见图1）。因为历史原因，台北不是个国际知名的地方。当时的口号是“Bringing Taipei to the world and bringing the world to Taipei”，背后的动机就是希望台北市成为国际上知名的城市。今天如雨后春笋般兴起，投资盖超高层建筑的各个城市相信也是基于这样的理念。

在这个资金宽松的时代要投资超高层建筑并不难，进步的设计及工程技术也使得施工营建不那么困难，而完工后的营运才是问题的开始。

这篇报告将以台北101为案例，说明要达到成功营运应具备的要素；每个城市的超高层建筑应对自我的期许，成为都市建筑群的领导者；最后，要善尽企业社会责任，追求可持续性发展。

成功营运的基本要素

超高层建筑的投资者在决定投下重资兴建的时候，必定有极大的决心要让这个建筑物成为成功完美的建筑。在辛苦盖出来之后的营运阶段，必须至少要达到下列几项才可说达到了成功营运。

安全第一

任何建筑都会说安全重要，但安全对超高层来说至关重要，而且是不可妥协的重要。消防安全尤其是不可有任何差错。超高层建筑的使用人数以及其对社会的影响力，使得任何在其中发生的安全事件所导致的后果也会比一般的建筑发生类似事件时严重。因

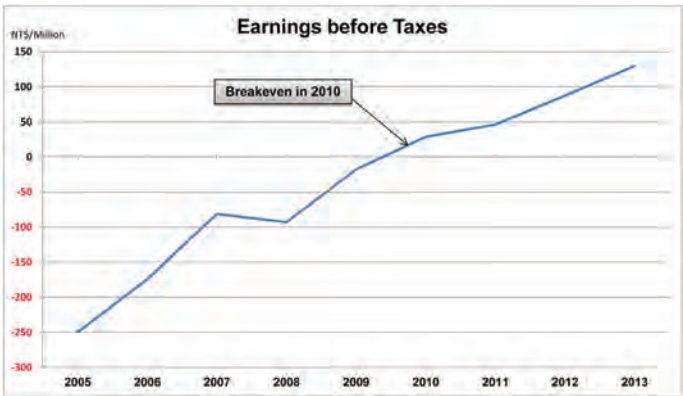


Table 1. Earnings before Taxes 2005-2013 (Source from TAIPEI 101)  
表1. 2005-2013年台北101大楼运营税前收入 (来源: 台北101)



Figure 2. HVAC system (Source from TAIPEI 101)  
图2.暖通空调系统(来源:台北101)

### All Systems and Services Function Properly

One would say this is very basic, but it is not as easy as one would think, especially for a super high-rise building. Elevators, fire systems, HVAC, electricity, water supply and plumbing are all systems which should function according to design, but invariably will need to be adjusted and modified according to actual situations of operation. Some examples of modifications in TAIPEI 101 are as follows:

- some smart features of the elevator design were not humanly workable, so they had to be canceled or isolated
- fire system water pipe pump pressure was not up to standard and motors needed to be replaced
- chilled water pipe (see Figure 2) insulation was not sufficient and created lots of condensation requiring new insulation;
- water supply motors created floor vibration and was replaced with a better vibration free motor
- cool air balancing problems rendered some office space stuffy
- interior designers put all the thermostats in one wall space and VAV boxes could not adjust according to detected temperature in a specific area
- high-rise, and less densely populated tenants complained about low temperature indoor in winter time and we had to create heating panels to lift fresh air temperature before it is mixed with indoor air

Every building has design or construction issues left for the operation team to tackle and solve. But those that are experienced in supertall buildings are often more complex and occur more frequently. As long as budgets permit, the building owners should face the problems and try to fix them.

### Customer Satisfaction

Construction is a manufacturing business, but property management and operation is a service business. TAIPEI 101 deals with office employees, shoppers and tourists. Customer satisfaction is the key and

此超高层建筑从设计规划到验收及营运都须以最高标准来要求,并严格执行。也正因为如此,住宅用途的超高层建筑特别令人担心,因为势必会有厨房烹煮设备,消防的各项设施完备性及定期维护检查是绝对必要的。

### 营运收益

超高层的特点是投资金额高、施工期长,因此财务的压力是比较大的,回收期是比较长的。完工即开始计算折旧,也就是亏损的开始。因此超高层的用途要有能一开始就有收益的部份,譬如台北101的三合一营运体模式,购物中心、观景台及办公室是一个很好的模式。购物中心在大楼完工前一年2003年11月营运,开始有收益;观景台也先装修好在2005年1月开始营运,而办公室在租户装修好2005年4月才开始收益,但办公室出租率是逐步成长的,因市场的因素到了第五年才到八成出租而达长期稳定收益;整个营运到第六年才转亏为盈(请见表1),成为赚钱的投资;到了第九年才弥补亏损。

### 设备系统正常运作

这当然是非常基本的条件,但执行起来并非易事。电梯、消防、空调、电力、给排水各项大系统都必须依设计运行,而且依营运上实际情况调整。在台北101营运后就发现了一些必须做的调整案,例如:

- 电梯的一些智能设计不符合人性,而须调整或取消功能;
- 消防泵的压力未达标准而需更改马达;
- 冰水保温材料(请见图2)未发挥效果而产生大量冷凝水,需重做保温材;
- 给水马达造成楼板震动,而更换为无振动马达;
- 空调风力平衡问题造成楼层管末空间太闷热;
- 室内装修为求美观将温控器集中摆放而未能依各区域实际温度自动调温;
- 冬季高楼层人数少的租户抱怨太冷,大楼于外气进气管增设加热板以提高室内空气温度。

每个大楼都会有设计或施工的问题遗留给营运单位解决,超高层的问题只会更复杂更多样。在预算允许范围内,营运单位要面对问题,并解决问题。

### 客户满意度

管建业是制造业,但物业管理及营运是服务业。台北101因有三种营运单位,所以面对要服务的对象包括有办公室租户员工、购物中心的消费者和各国来台湾的游客。客户的满意才是长期绩效的根本,台北101从营运开始就非常注意客户的意见及满意情况。除了设置专属的服务中心及客服人员,立即随时处理客人的要求及投诉,并做好纪录,每年定期不定期举办回馈客户的活动,并每年执行满意度调查以了解客户的需求。

### 成为领导者

### 引领绿色建筑风潮

建筑物耗能占都市耗能的40%,因此建筑物节能减碳有实质具体成效。不是新建筑设计的才要讲求能源效率,现存所有建筑都需节能,才能有效降低整体能源需求,而有助减缓全球变暖。

高层建筑在先天上就比较耗能——电梯数量一定较多、空调的制冷输送监控、电力配送备援、全面完善消防系统从感应器到消防用水输送。在这些必要的系统之外,还有自动化监控系统,可能有垃圾收集系统、门禁管理系统、CCTV监视系统。超高层建筑不是只有面积增加,各种系统的复杂度大幅提高,因此在天生能耗资源的情况下,如我们仍相信超高层所能带来的好处及优势,

fundamental to long term success. From the start TAIPEI 101 spent much effort in this area. Dedicated service centers were set up for the office and for the shopping mall to immediately respond to customer's requests and complaints, which was then well documented. Various events catering to the customers were organised, and an annual satisfaction survey was conducted to understand customers' needs.

## Be The Leader

### Leading Green Building Movement

Buildings consume about 40% of total energy consumption in a city. Therefore it would significantly reduce total energy demand if buildings can reduce their consumption. Not only should new buildings be designed to be energy efficient, but existing building stock should also reduce energy consumption to effectively reduce total demand and alleviate the threat of global warming.

High-Rise buildings inherently consume more energy - more elevators are needed; the HVAC system and distribution are large and complex; electricity distribution is significant and requires a backup system; and the fire prevention and fire fighting systems require additional investment and complexity that is not necessarily the case in smaller structures. In addition to these essential systems, there is automation control systems, garbage collection systems, access control, and CCTV. Supertall buildings not only contain more square footage, but also more complexity. Despite the inherent high energy needs, if we still believe in the benefits and advantages of supertall buildings, we are obliged to place heavy emphasis on energy and resources efficiency to justify the existence of supertall buildings and make them more acceptable to the citizens, and especially the environmentalists.

TAIPEI 101 did, from its conception, consider environmental issues and designed special features into all elements of the structure. Such systems included:

- Dual layer low-e glass curtain wall (see Figure 3)
- energy management and control system
- garbage collection system
- rain water collection system

But at the time the project team was not aware of certification systems such as LEED. In the operation stage, the management team wanted to save energy and made great efforts to preserve energy. Some examples as below:

- changed all Exit sign lights from T8 light tube to LED
- added light switch in service lift lobby
- added motion sensor for lighting in refuge rooms and two-way switch in mechanical rooms
- walked through all back of house space to identify area where lights could be reduced
- changed all lights in parking lot from halogen lights to T5 light tube

After good results were achieved in energy reduction, the team went on to apply for LEED existing building certification. After, two years of alterations and improvements LEED Platinum level was achieved (see Figure 4). The management team went through this somewhat painful exercise for two main reasons:

我们就不能不重视如何节能减少资源消耗，以让超高层的存在更具正当性，也更为市民所接受。

台北101在兴建时注重环保，因此有：

- 双层隔热玻璃幕墙 (请见图3)，
- 能源管理控制系统，
- 垃圾收集系统，
- 雨水回收系统。

但那时并不知道LEED这样的环保认证，在营运后因为电费太高而开始各种节能努力，譬如：

- 更换所有紧急出口灯的T8灯管为LED灯；
- 货梯厅增设灯光开关；
- 避难室增设灯光感应器及机房增设双向灯光开关；
- 检查所有后场空间找出可减少灯光处；
- 将停车场所有卤素灯更换为T5灯管日光灯。

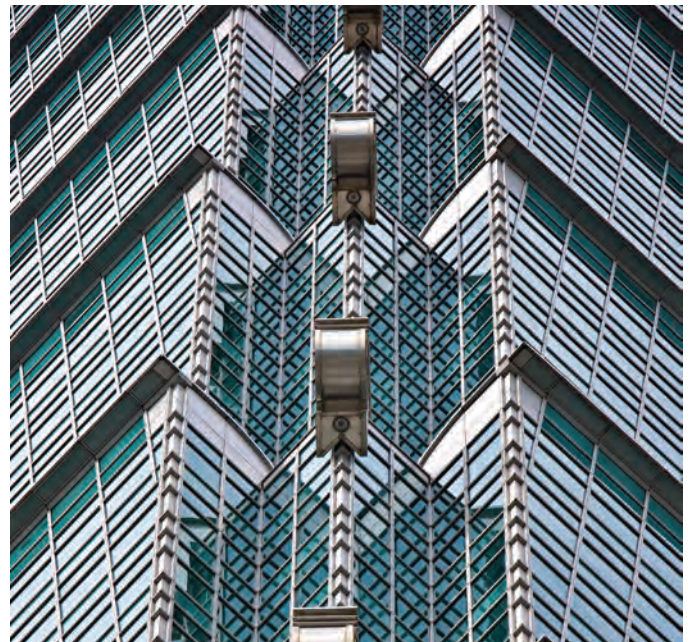


Figure 3. Building façade (Source from TAIPEI 101)  
图3. 大楼幕墙 (来源: 台北101)



Figure 4. LEED lighting on tower to celebrate LEED certification (Source from TAIPEI 101)  
图4. 大楼打出“LEED”灯光字样庆祝台北101获得LEED认证 (来源: 台北101)



Figure 5. Annual fireworks show to welcome new year (Source from TAIPEI 101)  
图5. 每年的跨年烟火表演庆祝新年 (来源: 台北101)



Figure 6. Valentine's Day event (Source from TAIPEI 101)  
图6. 情人节活动 (来源: 台北101)

1. after five years of operation, to have a third party verify the current condition and physical health of the building
2. to capitalize on the international name and landmark status of the building, using it as a role model to let other building owners know about green building certification and the importance of energy saving and environmental responsibility

Hopefully other building owners will follow suit and turn their buildings into green buildings. The overall environment of the city will thus be improved and more people could live and work in better indoor environment quality buildings.

### Dialogue with Society

Any supertall structure appearing in a city is a major event, as it will change the city. From the Eiffel Tower to the Empire State Building, to TAIPEI 101 Tower, people usually start with a rejection attitude. During the construction stage, TAIPEI 101 was faced with a lot of negative comments and reports. At completion, the owner really placed heavy emphasis on turning that sentiment around. Whether the year-end fireworks (see Figure 5), or lighting on the building for festivals (see Figure 6), all sorts of events are dedicated to improving the relationship with our local residents. Our local community now

在节能卓有成效之后,才以既有建筑类别申请美国绿建筑协会的LEED标章,并且经过两年努力获得白金级认证(请见图4)。台北101经营团队会不辞辛苦作此申请的两大理由是:

1. 让第三方公证单位验证大楼的维运成果及做一次全面体检;
2. 以台北101的国际知名度及地标地位带头提倡环保节能减碳,希望其他建筑物纷纷效仿,有信心也成为绿建筑。

如此,整个城市的环境能获得改善,更多人能够生活工作在环境良好健康的建筑物之中。

### 与社会沟通

任何超高层建筑体的出现对一个城市都是件大事,因为它会改变这个城市。从艾菲尔铁塔到帝国大厦再到台北101大楼,人们一开始可能都是排斥为多,台北101在兴建过程面对了很多的负面评论及报导,在完工后业主因此花费很大心力企图改变这样的看法。不论是跨年的烟火(请见图5),节庆在大楼上点灯的祝贺(请见图6),举办各类市民参与的活动,都是希望能拉近与市民的关系,让市民更接受这栋庞大突出的建筑物成为人们生活的一部分。每年的登高活动有四五千民众报名挑战2046阶梯,从一楼爬到九十一楼。超高层建筑是都市视线焦点,而它也可扮演凝聚社会力量的角色,为社会表达集体的祝福及感动,如台湾电影导演李安得奖奥斯卡导演奖后,亮出“李安赞”表达恭贺之意;2014年情人节大楼亮出101对情人的名字让他们向对方表达爱意。这些活动都获得了市民的热烈回响,台北101大楼因此更获得市民的认同与喜爱。

### 公益议题

现在企业都要讲求社会责任,关注社会议题,照顾弱势团体。超高层建筑有很好的舞台可以发挥,其中工作的租户员工人数众多,是一个社区,集合这些人成为一股慈善的力量。台北101举办公益义卖“爱、市集”让慈善团体制作的物品有销售管道,筹募资金(请见图7)。超高层建筑可以其高度及能见度创建一个平台,让社会公益及慈善议题获得更多关注,譬如台北101亮起“<29C”的灯光(请见图8),提醒市民如地球温度提高超过这个数字是有严重后果的;举办乳癌防治月的活动点亮粉红丝带(请见图9),还有糖尿病关怀活动等。台北101的观景台更常接待弱势团体或学生参观,期望日后对他们有所启发鼓励(请见图10)。

### 追求长期性

#### 财务规划

超高层建筑的规划兴建必须以长期持有来考虑,其设计规划应找各种专业的顾问参与,前期的各专业顾问费用绝对是值得的,可避免后来的问题。从建材挑选、设备系统选择等等都需要考虑长期维运的效率。譬如台湾有一些高楼,经营管理情况很糟糕,主要问题是分散产权的办公室或住宅销售出去后,没有人整合营运策略,一旦较多小业主不支付管理费,大楼就无法妥善维运。设备不好好维护,日后需更多的资金更换设备。要众多小业主支付管理费就不容易,同意出资金更是不可能。最后只能勉强电梯上下,其他公共区域及设施仅勉强堪用。因为居住人数众多,反成为当局的安全隐忧。现在要规划超高层建筑的开发商,一定要有良好的长期财务规划,将此投资计划拉长时间,超高层建筑不可急功近利,耐心妥善经营则长期的回报更可观。

#### 可持续性

超高层建筑的利害关系人不是像一般建筑只有股东及客户,它的利害关系人还有一般民众及政府。建筑物在城市是长期存在的,超高层建筑以其所花费的投资更是一个百年大计。探讨可持续性的理论说明除了财务性外,还有环保性及社会公益性。如以英文

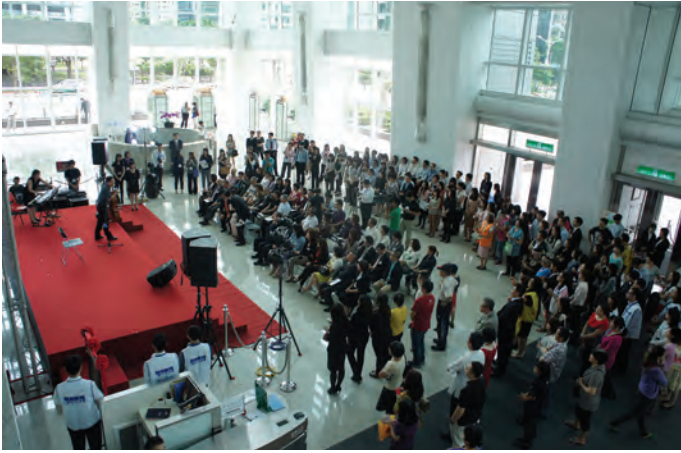


Figure 7. Charity event (Source from TAIPEI 101)  
图7. 慈善活动 (来源: 台北101)

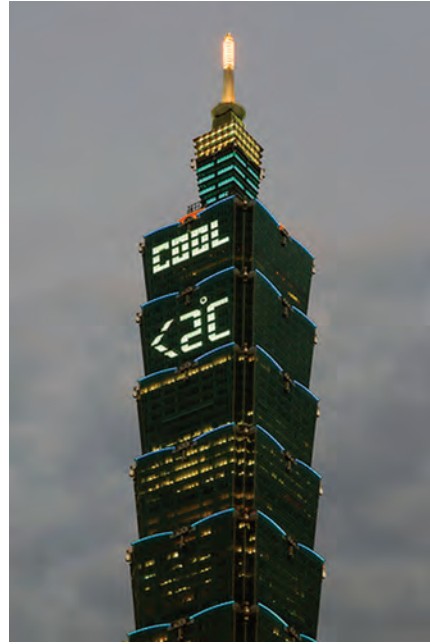


Figure 8. Minus 2 degree lighting to raise awareness of climate change (Source from TAIPEI 101)  
图8. 点亮“<2°C”灯光字样希望引起人们对气候变化的关注 (来源: 台北101)



Figure 9. Pink Ribbon lighting on tower to raise awareness to breast cancer (Source from TAIPEI 101)  
图9. 大楼点亮粉丝带灯光图案希望引起人们对乳腺癌的关注 (来源: 台北101)



Figure 10. Green Tour for students (Source from TAIPEI 101)  
图10. 学生的绿色建筑之旅 (来源: 台北101)

accepts this monumental structure as part of their city life. The annual stair climb race welcomes 4-5,000 participants to climb up the 2046 steps from 1F to 91F. When Film Director Ang Lee won the Oscar Award, a light message was projected on the tower “Ang Lee Great!” expressing congratulations to the Taiwan-born Hollywood Director. 2013 Valentine’s Day, we invited 101 couples to put their names on the tower to express their affection to each other. These were all warmly received and were good communications to the citizens of Taipei.

### Charitable Causes

Companies now need to be concerned with social responsibility and demonstrate care for social issues. Supertall buildings have a responsibility to communicate this message. The employees of tenants have formed a community and become a charitable force. TAIPEI 101 organized charity sales so charity groups could sell their products to raise funds (see Figure 7). Supertall buildings, with their height and visibility literally create a platform for disadvantaged groups and charitable causes to receive much more attention. For example, TAIPEI 101 lit up “<2 °C” (see Figure 8) to remind citizens of the serious consequence if the earth’s temperature is increased by 2 degrees. TAIPEI 101 held events and lit up “pink ribbon” lights (see Figure 9) on the building in support of breast cancer awareness, and “Blue Circle” for diabetes care. TAIPEI 101 Observatory received many visitors and students from disadvantaged families in the hope that such visits would be inspirational to them in their future endeavors (see Figure 10).

## Long Term Perspective

### Financial Planning

Supertall building investment should be a long term holding, and its operation and investment return needs to be on long term basis. The design and planning requires various consultants for each particular field. Investment in the early consultancy fee is well worth it to avoid future problems. There are other tall buildings in Taiwan that are in a particularly distressed condition. Unfortunately these properties, which included residential occupants, were strata titled - office and residential units were sold to individual owners. There was no consistent operating strategy and when individual owners withheld their management charges, problems in maintaining the building properly emerged. Poorly maintained equipment needs to be replaced sooner. If raising fees for maintenance was a difficult proposition then raising fees for capital investment is almost impossible and entire buildings are falling into disrepair. At the end only elevators are usable,

and other common area facilities are barely functional. The buildings become safety concerns to the authority because of the large number of residents. Developers intending to build supertall buildings need to have proper long term financial planning and ownership that reflects proper maintenance and investment. Supertall development are not a short term profit undertaking, with patience and proper operation, the long term return would be more rewarding.

### Sustainability

The stakeholders for supertall buildings are not only the owners and occupants, but also the general public and government. Buildings exist a long time in cities. Supertall buildings, for the size of their investment, are even hundred year establishments. The triple bottom line theory for sustainability states that there are economic, environmental and social perspectives to achieve sustainability, to be expressed by 3 Ps, Profit, Planet and People. Supertall buildings have an obligation and responsibility to perform in these three areas. In addition to pursuing profit, it needs to pursue environmental responsibility and to contribute to the city, so the efforts of the investors, designers, and builders are not in vain.

In general, companies talk about sustainability, but they actually face many variables, for one thing product or industry's cycles. The company may not always survive the cyclical changes of their product, therefore there are only a handful of companies over a hundred years old. But buildings over a hundred years are abundant. Supertall buildings are city landmarks, and they have to pursue sustainability and stand the test of time.

### Conclusion

Supertall buildings are built with many people's endeavors, and it carries a greater many people's expectation and inspiration. Firstly successful operation needs to be achieved to satisfy various stakeholders, in safety, in profit generation, and in service to customers. But supertall buildings also need to become leaders in the cities, in environmental issues, in interacting with the society, in social responsibility. That is achieving sustainability. These supertall buildings forming the skyline of cities are also the icon of their cities and the pride of their citizens (see Figure 11).



Figure 11. Biggest annual event for Taipei citizens (Source from TAIPEI 101)  
图11. 每年台北市民最大的庆祝活动 (来源: 台北101)

字母表达就是3个P，Profit利润、Planet地球、People群众。超高层建筑有这个义务及责任在这三个方面都兼顾。也就是在一般利润的追求外，一定要追求环保，更要对所在的城市作出贡献，才不枉费投资者、设计者及施工者的努力与汗水。

一般企业谈可持续性发展，变数很多，因为产业或产品会循环，企业未必能一直找到获利利基 (niche) 而存活。世上超过百年的企业屈指可数，但超过百年的建筑比比皆是。如超高层建筑是城市地标，那必然要追求可持续性。

### 结语

超高层建筑在很多人的努力下盖成，承载了更多人的期望及要求。首先要做到成功的营运，即在安全上、获利上、维运上、服务上，达到各方面利害关系人的要求。但不只这些，超高层建筑需要成为城市中的领导者，在节能减碳环保工作上成为领先者，与社会有互动及对话，并在公益议题上善尽企业社会责任，这样才能达到可持续性的发展。超高层建筑既塑造了都市天际线，亦成为的城市象征及市民的骄傲 (请见图11)。