

REPORT

COFO Side Event on “Urban Forests for Sustainable Cities”



Figure 1. Panelists. From the left: Mr Jacques Tavares, Mr Thomas Tidwell, Mr Simone Borelli, Mr Wenfa Xiao, and Mr Fabio Salbitano

The past few decades have been characterized by increasing urbanization, with particularly high rates in developing countries, where the urban growth has largely outpaced the capacity of urban settlements to provide dwellers with essential services and goods. At present, 54% of the world population lives urban area, and this percentage is projected to reach 70% in 2050, with most of this increase taking place in Asia and Africa.

The evidence of the environmental and socio-economic unsustainability of this urban growth is increasingly drawing public attention to the need for more sustainable and resilient urban models, capable of responding to increasing demands for food and basic ecosystem services. By providing ecosystem services, products and public benefits in and around urban settlements, well-designed and well-managed urban forests can significantly contribute to the livelihood and health of urban and peri-urban communities, both in developed and developing countries. In spite of this, the development of sound urban forestry programmes still faces a number of challenges, and urban forestry rank low in the local agenda of most cities.

Luckily, a number of countries such as the USA and China are leading the way in the implementation of national and local programmes to promote urban forestry as a tool for sustainable and resilient urban development, and many smaller ones, such as Cape Verde, have started reintegrating tree and forest resources in and around their cities. For its part, since the early 1990s, FAO has been supporting the development of actions, projects and strategic planning tools aimed to assist member countries in implementing urban forestry policies and management actions towards a more equitable, sustainable and resilient urban development. The most recent action in that direction is represented by the development of the FAO *Urban and Peri-urban Forestry Guidelines* - to be launched in Quito

(Ecuador) at the occasion of the Habitat III Conference - aimed to provide a global reference framework for the development of environmentally sound, socially inclusive, better integrated and connected urban green infrastructures for increased sustainability in urban development.

These and other experiences around the world prove that investments by communities and governments in the protection and restoration of urban forests and other green cover in and around cities, coupled with sound policies, can pay dividends and provide a real contribution to a healthy and resilient urban environment.

This side event aimed to provide an overview on policies, field projects, tools and researches developed in different regions to support urban and peri-urban forestry implementation at different scales. Final objectives of the event were to:

- provide an overview of urban forestry implementation at different scales, from the policy to the technical level;
- contribute to an increased understanding of the importance of urban planning in the optimization of the goods and services that urban and peri-urban forests can provide;
- flag the key contribution of urban and peri-urban forests towards the achievement of SDGs, particularly SDG 11; and,
- pave the way towards the global dialogue that will take place at Habitat III Conference (Quito, Ecuador, October 2016).



Figure 2. Panelists.

PRESENTATIONS

Green Infrastructure: Key to Livable Cities in the United States

Mr Thomas Tidwell, Chief of the U.S. Forest Service, USA

Mr Thomas Tidwell introduced the studies conducted by the US Forest Service towards the calculation and estimate of the benefits provided by urban forests and trees to the urban population in the USA. In the United States of America, urban areas fill only 3 percent of the land area but hold more than 80 percent of the citizens. The urban and community forests cover about 40 million hectares and hold over 3.8 billion trees with tremendous benefits to citizens. However, the benefits from urban forests are often difficult to quantify because they have no recognized market value. To fill this gap, researchers from the U.S. Forest Service developed in 2006 "i-Tree", a tool to help communities calculate the market value of their urban forests. The tool lets users find the dollar value of benefits from urban forests, including energy cost savings, stormwater capture, and city pollution absorption. The results are very encouraging. For example, it was found that every dollar invested in urban forests in Chattanooga, Tennessee, returned value of more than \$12. Mr Tidwell also reminded that urban forests provide not only direct benefits (such as air pollution removals) but also social benefits such as reduction of crime rate and increase in human health. Series of studies have shown that an increase in the tree canopy density reduced crime rates in Baltimore, Maryland, as well as drug use and theft in Philadelphia, Pennsylvania. Urban forests can also improve human health by reducing levels of stress, preventing obesity, and accelerating the recovery of patients from illness. In addition, planting trees in poor neighborhoods foster environmental justice within cities.

The U.S. Forest Service underlined that urban forest represent the physical connection between urban areas and larger forest landscapes. In light of this, a sound urban forest management addressed to create and maintain an extensive and diverse urban tree canopy cover, is essential for ensuring the protection and conservation of existing natural forests. Urban forests also play a key role in building a connection between nature and people. The availability of urban forests close to cities, in fact, allows citizens to experience forests without going far from the place where they live, thus helping strengthen people's link with nature and increase public awareness on the importance of preserving natural resources. Finally, Mr Tidwell mentioned that the U.S. Forest Service will continue its effort to provide education programs - both at national and international level - to support the protection and to grow urban forests around the world.



Figure 3. Urban forestry education for children

Development of the "National Forest City" programme in China

Mr Wenfa Xiao, Director at the Research Institute of Forest Ecology, Environment and Protection of the Chinese Academy of Forestry, China

Mr Wenfa Xiao from the Chinese Academy of Forestry introduced the "National Forest City" programme, implemented by China over the last decades to increase the tree cover in and around Chinese urban areas. China has the largest population and fastest urbanization rate of the world. In 2010 - for the first time in history - the Chinese urban population matched the rural one; since then, it kept growing and by 2025 it is expected to reach more than 65% of the total Chinese population. In order to respond to the increasing environmental problems due to this fast and often unplanned urbanization process, in 2004 the Chinese government launched the "National Forest City" programme.

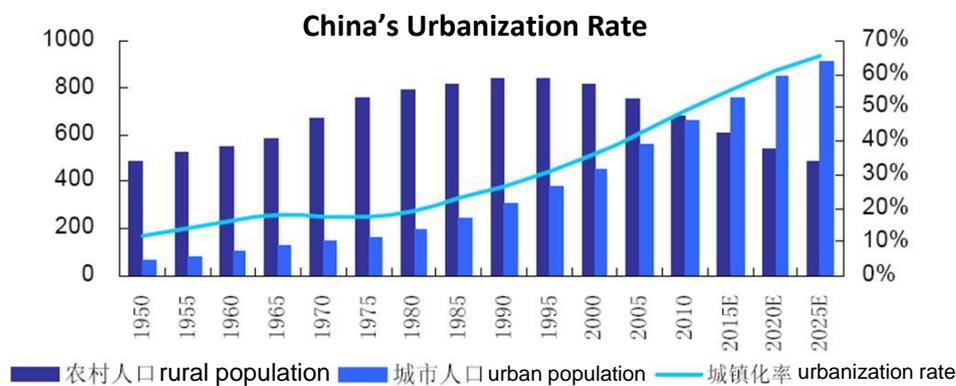


Figure 4. Increasing urban population and urbanization rate in China

Since then, the programme has accomplished remarkable achievements and received an active feedback from the government and sincere appreciation from the public. At present, more than 170 cities are involved in the programme, 96 of which have already been granted the title of "National Forest City". The programme is based on the following "principles":

- 1) The development and implementation of urban forest management plans' should be based on solid scientific basis.** In order to be awarded "Forest City", the city must prepare and submit a 10-year urban development plan in which urban forest implementation is included. The proposed plan is then assessed by a group of experts through the application of 40 *Indices for Assessing National Forest City*. In case of accomplishment of the requirements, the City is awarded "National Forest City". From then onwards, the requirements are reassessed every three years to confirm the title received by the City.
- 2) Urban forest development plans should meet people's needs and be people-oriented.** The people-oriented approach is at the core of the Chinese culture and philosophy, as well as one of the main

principles of the Chinese government. Purpose and use of the urban forest should be taken into account since the planning phase.

3) Urban development should be addressed to increase landscapes integrated management towards the development of a continuum between urban green areas and peri-urban/rural natural ecosystems. One of the main objectives of the National Forest City programme is to restore and improve the natural ecosystems in/between urban and rural areas. To this aim, the National Forest City values mountains, rivers, lakes, forests and farmlands as important elements to be incorporated in the urban forest of a city.

4) The management of urban forest ecosystems should be based on a close-to-nature management approach. The development and implementation of the urban forest of a city is closely linked with the inner laws of forest ecosystem and close-to nature forestry theory. According to this approach, cities must aim at building self-sustaining forests, taking into consideration forest ecological principles and prioritizing it. To this aim, it has been established that the percentage of native species in a city should not be lower than 70 percent, with the urban forest based on a multi-layer structure including trees, shrubs and grass to improve biological diversity and ecological functions of forests and green plots.

5) Urban forests planning and management must be based on a participatory approach, where the whole society participates with different roles and duties and give a key role to government for leadership and focus on forming a pattern of co-building and sharing. The municipal government should take a leading role in the process, ensuring the allocation of adequate funds, the development of policies and mechanisms facilitating investments from the private sector, and ensuring the supply of planting material.



Figure 5. Urban forest development in Xining city, capital of Qinghai province

According to the statistics, since when the programme was launched, the average annual new forest green cover per city amounts to 14,000 hectares (almost the equivalent of a yearly 1% increase in cities' forest cover). Over 95% of the residents support and are satisfied with the results achieved. Undoubtedly, the "National Forest City" programme has been shown to be an effective strategy to improve public's well-being through the provision of key goods and services.

The Cape Verdean approach to the successful establishment of urban forests in semiarid lands

Mr Jacques Tavares, Director, Forest and Rural Development Service, Ministry of Agriculture and Environment - Cape Verde

Mr Jacques Tavares, officer from the Ministry of Agriculture and Environment presented the implementation of urban forestry in Cape Verde. Cape Verde is a 4,033 km² island country located 500 km away from the Senegalese coast. Its natural vegetation is highly degraded due to excessive pastoral activity and to the implementation of agricultural practices inadequate for the local dry tropical climate. Before 2000, more than 60% of the Cape Verdean population lived in rural areas; at present, more than 60% of the local population live in urban areas. Nowadays, 19% of the energy used by houses comes from woody biomass; with the urban population increasing year by year, it is expected that also the consumption of this energy resource will increase in the near future. In order to increase the forest area in Cape Verdean urban and suburban zones towards improved environmental and socio-economic conditions, in 2015-2016 the country, in collaboration with FAO, developed and implemented an urban forestry project. The project involved four cities: Praia (Santiago island, 273,919 inhabitants), Mindelo (São Vicente island, 76,107 inhabitants), Porto Novo (Santo Anão island, 43,915 inhabitants), and Espargos (Sal island, 25,657 inhabitants). A number of partners were engaged in the project, including the Ministry of Agriculture and Environment (MAE), the City Hall, the task force from the city, and the National Project Coordination group. Each partner had specific roles and responsibilities in the different cities, depending on the specific problems/issues to be addressed.



Figure 6. Meetings and discussions with different stakeholders for urban forestry project in Cape Verde

The main activities implemented under the project include: (i) creation of a permanent monitoring team in each city for the maintenance of the established trees and green spaces; (ii) development of the capacity of NGOs and local communities to plant and manage trees and green spaces; (iii) construction and rehabilitation of nurseries for the production of urban trees; (iv) development of

infrastructures for the pre-treatment of sites and plants (terraces, walls and benches); and, (v) development of irrigation systems. In light of the positive results obtained, the project should be further continued and integrated to also address present and future increasing needs for woody biomass.

Trees, cities and people: urban forestry supporting quality of life

Mr Fabio Salbitano, Professor, Department of Agriculture, Forestry and Food Systems Management, University of Florence, Italy

Mr Fabio Salbitano from the University of Florence focused his presentation on the different perception of the value of the goods and services provided by the urban forest in high-and low-income countries. Although we tend to consider the more developed part of the world as being the most urbanized one, it is a matter of fact that most of the urban population increase is happening in low income countries, especially in Asia, where the world greatest increase in megacities' number and size is currently registered.

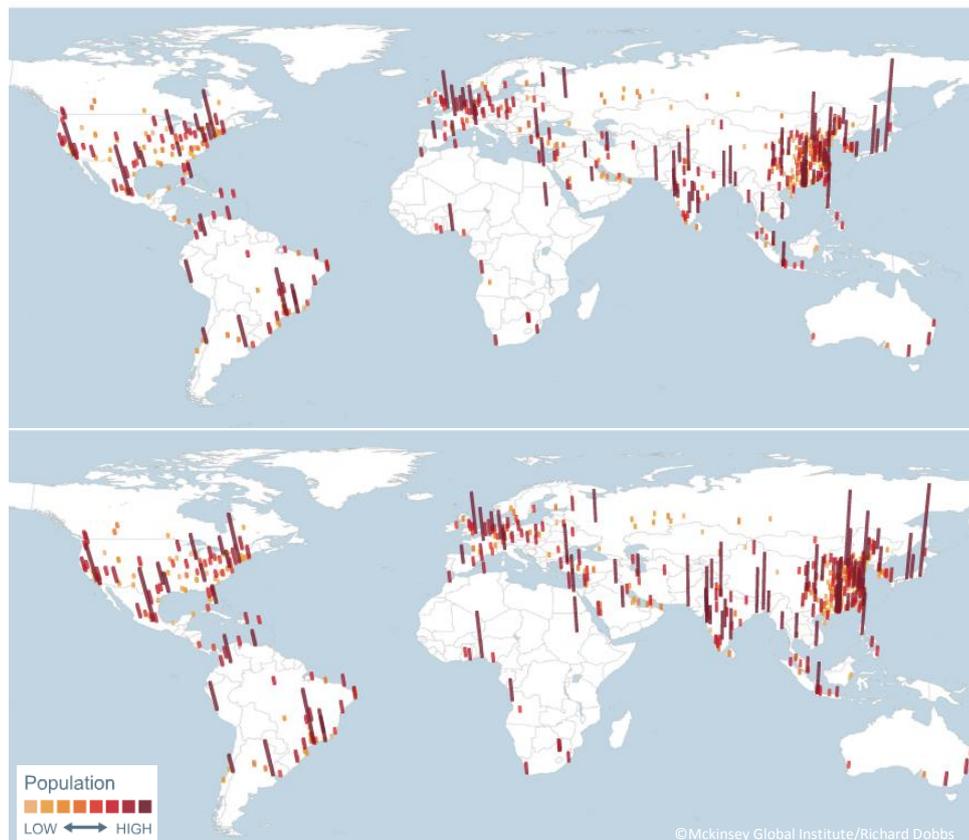


Figure 7 Population growth in world megacities and middleweight cities in 2010 (above) and 2025 (below)

The proper management of urban forests can provide a wide range of benefits both in developed and developing contexts. In spite of this, such contributions is differently valued, with the provisioning services (e.g. fruit, bushmeat, fuel, fodder, construction material, water) been valued as a priority in poorest cities/countries, and the regulating and supporting services (biodiversity conservation, watershed regulation, recreation, beautification) being valued as being the most relevant in more in developed cities/countries. The same different perception is reflected within cities, when comparing poorest and richest district.

For instance, the strategy developed for the City of Bangui, in Central Africa, as well as the one developed for Cape Verde, provisioning services are the main component and agroforestry, urban agriculture, and need for poverty are highly relevant. On the other hand, the urban forest strategy developed in high-income cities/countries (e.g. Melbourne, in Australia) would be addressed to optimize the management of urban tree and forest resources in relation to the regulation and cultural services they can provide. However, we should not forget that these ecosystem services are also highly important in developing countries to ensure the environmental sustainability of urban growth (e.g. watershed management) and increased well-being of all urban dwellers (e.g. education).

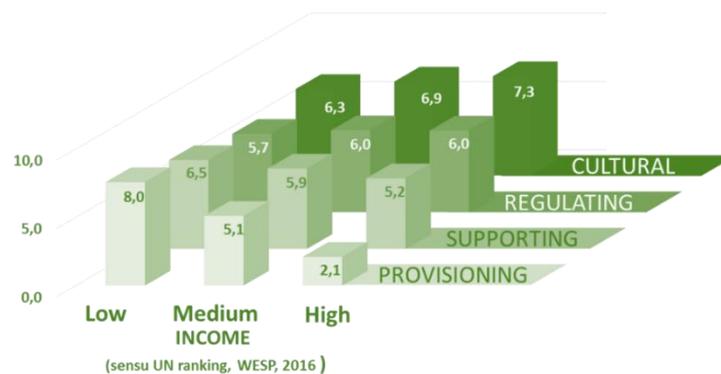


Figure 8. Expected contribution of four types of ecosystem services in countries with different income levels.

To optimize the contribution of urban forests towards a sustainable urban development in both developing and developed countries, long term planning and investments addressed to improve the planning, design and management of the urban forest and green infrastructure of a city are strongly needed. To this aim: (i) urban forests and green infrastructure must be integrated in the urban planning of the city, protected, restored and sustainably managed; (ii) stakeholders from different sectors should be fully involved; (iii) local needs must be understood and addressed; (iv) adequate policies for land-use must be developed and implemented; (v) research and information should be exchanged; (vi) best urban forestry practices should be shared. To support this process, FAO will publish in October this year (at the occasion of the HABITAT III Conference) the first *Urban and Peri-urban Forestry Guidelines*.

QUESTIONS AND DISCUSSION

The discussion focused on topics raised by the speakers during their presentations.

The first question posed by participants was related to the linkages between the presence of urban forests and the **reduction of crime**, mentioned by Mr Tidwell during his presentation. While there is no conclusive scientific evidence on the relations between the two phenomena, Mr Tidwell said that this appears to be related to the impact of the presence of green areas on social cohesion in neighborhoods.

The second question raised by the attendees was related to the high **minimum percentage of native trees** (70%) imposed by the China urban forest policy in the development of urban forests project. Mr Xiao confirmed that this is an important criteria in long term urban forest planning and management in China, and that this is fully supported by dwellers, who prefer an urban landscape dominated by native species of trees. Mr Tidwell underlined the importance of this approach, recalling the fact that maintaining a dominance of native tree species is also key in supporting local biodiversity.

The third issue raised by the attendees was related to the importance of the **selection of the right species** in urban forestry plans. In this regard, Mr Tidwell underlined the potential role that i-Tree can have in supporting this selection process by providing information on which species are more adapt to be planted in certain conditions (depending on soil, climate, water provisioning, etc.).

The last question posed by the attendees was related to the **role of the private sector** in urban forestry implementation. Mr Xiao confirmed that the role of private sector in urban forestry related fields in China has gained importance, especially with regard to infrastructure construction and eco-tourism implementation. The very National Forest City programme implemented by the country counts on the support from the private sectors. Mr Tidwell emphasized the importance that the involvement of the private sector had in the development of the i-Tree software, as well as in the creation of jobs through NGOs (e.g. Arbor Day Foundation). Mr Tavares also highlighted the important role played by the private sector in Cape Verde in supporting irrigation and reforestation projects, as well as the key role played by local NGOs in the implementation of urban forestry field projects.

CONCLUSIONS

The event provided participants with a good overview of how urban forestry is being increasingly implemented (both at technical and policy levels) and recognized as a valuable tool to address urban socio-economic and environmental sustainability issues in both developed and developing countries.

In particular, the event:

- provided evidence of the wide range of ecosystems services and goods that well-managed urban forests can provide towards more livable and sustainable cities;
- contributed to raise awareness and increase understanding of the importance of integrating urban forests in urban planning to maximize the benefits they can provide to urban dwellers (e.g. National Forest City programme in China);
- pointed out differences and similarities in the valuation of the benefits provided by urban forests in richest and poorest countries/cities/districts; and,
- highlighted the key role that FAO plays in fostering urban forestry implementation at global/regional/country level, as well as in highlighting the key contribution that it can provide towards the achievement of global goals (i.e. SDGs) and in addressing global challenges, including climate change adaptation and mitigation and biodiversity conservation.