1. What are the session key findings? What is/are the new Lesson(s) learned/ Scientific progress (since AR5 release, if relevant)?

- We found a lack of representativeness in sessions dealing with climate change effects on forests and with the important role of forests, in particular during the past few decades, considering that the world's forests have absorbed as much as 30% (2 petagrams of carbon per year; Pg C year\(^{-1}\)) of annual global anthropogenic CO\(_2\) emissions (about the same amount as the oceans) and that two-thirds of forests are managed globally.

- The extent of climate change impacts on forests and related scientific knowledge are still not equally distributed and effectively shared worldwide.

- The climate finance of any new legally binding agreement must acknowledge the constant uptake of CO\(_2\) from the atmosphere by forests and forest sectors each year.

- The assessment of carbon uptake in forestry is crucial; there is still room for more improvement.

- The integration of carbon storage into the wood chain is also crucial, in particular in the case of the LULUCF measures and biomass measures.

- Inefficient mitigation can lead to major C release due to the misadaptation of tree species to new climatic conditions.

- Forests and forest sectors are present in most climate plans.

- Deforestation is still an issue, even in developed countries (urbanization, encroachment).

- Forests are a crucial element, not only of landscapes, but also of human living conditions.

- There is a need to combine forest data, models and expert knowledge in order to provide information that links ecological processes and ecosystem services which contribute to human well-being.

- A holistic approach towards forest landscape planning is a way in which multifunctionality can be sustained, despite pressures that lead to changes and damage to forests due to climate change.
2. What are the major knowledge Gaps and Research Needs identified in the session?

- A more accurate understanding of climate change is required both regionally and locally to implement efficient adaptation strategies for forests and the forest sector.
- A challenge that lies ahead is the dissemination and sharing of accurate and comprehensive information to forest managers, in particular small and medium-sized holders.
- Suitable campaigns and attractive incentives for the implementation of adaptive strategies need to be developed.
- Irrespective of the potential risks and opportunities identified by forest research, the consequences of climate change are probably differently perceived by practical foresters, who may obtain their information about climate change effects and adaptation measures in a poorly structured manner.
- The spatial and temporal impacts of current climate changes on forests should be better monitored to provide accurate data with a specific focus on tree mortality.
- Harvesting guidelines are needed to maintain in-situ carbon storage, as well as long-term site fertility and carbon sequestration potential.
- There is a need to improve carbon balance assessment on the sites where intensive harvesting takes place.
- High efficiency energy conversion technologies are needed.
- The role of mitigation needs to be analyzed better and tipping points identified for each type of forest.
- Adaptation requires more R&D efforts to provide accurate recommendations for today’s practitioners.
- Trade-offs between various adaptation options in forest management should be better identified.
- Detailed analyses of the carbon balance in the forest sector should be improved.

3. Did the session discuss/identify promising approaches in the fields of Adaptation and Mitigation, or both?

Yes, the session discussed how adaptation of forests is essential if mitigation is to be achieved, otherwise forest decline/dieback and damages could still produce a positive emission of C and greater climate change.

- An emerging topic in environmental science and management that needs to be strongly supported is the adaptation of forest ecosystem management to the uncertainty created by climate variability and other current drivers of change (e.g., human derived impacts, like intensive harvesting, and invasive species).
• If, in public forestry, C is an externality, a way to encourage Carbon efficient management of private forests is to design systems in which the good carbon management will lead to a better income.

4. Are there take-home messages from the session?

(When relevant, please specify targeted group of stakeholders. For example, policy-makers / COP21 negotiators, practitioners (experts, etc.), NGOs, private sector, citizens, media, etc.)

Forests are the largest terrestrial sinks, but they are vulnerable. The substitution effect (renewable energy) and storage in wood material should be taken into account in carbon accountancy. Integrated approaches are needed in all forest ecosystem services.

Forests planted or regenerated today will last decades or centuries. Foresters are responsible for the generation of future landscapes. They need support in dealing with the uncertainties of climate change dramatically affecting forests and the sustainability of the forest sector.

5. Are there Important Quotes from the session?

• Peter Freer-Smith, Forest Research: “Planted forests have a critical role to play: they represent 7% of the global forest area and 45% of roundwood production. Therefore, in theory, doubling the area of planted forests would allow us to protect all the world’s primary modified natural forests and assisted natural regeneration from logging”.

• P. Freer-Smith: “The willingness to change and the capacity to make appropriate recommendations for adaptation to the future climate differ a lot from one region to another”.

• Sandra Luque, Irstea: “Adaptation will be necessary in order to address unavoidable impacts that will directly affect forested landscapes. The improvement of adaptive management tools, communication strategies and access to information are the key challenges faced in sustainable forest management worldwide and when designing forested landscapes resilient to a changing climate”.

• S. Luque: “When selecting future adaptive management options, trade-offs between forest resource use and environmental objectives need to be taken into account in order to maintain the provisioning of forest goods and services (FGS) under future climate change”.

• Christophe Orazio, EFIATLANTIC: “Forests are unique systems which allow the movement of C from the atmosphere to long-term storage pools, such as soils. Therefore, more attention must be paid to their role and their sustainability”.

• C. Orazio: “It is interesting to see that many scientists warn of the potential hazards arising from climate change (fires, pest outbreaks, drought, etc.); however, there is little effort made to monitor tree mortality and the amount of mortality induced by climate change”.

6. Please include any other remark that you might have.