Dr. Timm Tennigkeit: “Walnut forests of Kyrgyzstan are gradually transitioning into open parklands”

*New intensively managed walnut agroforestry systems – outside the existing natural walnut forests – should be established to improve local people’s livelihoods, to reduce erosion and reduce pressure on the forests under protection.*

Dr. Timm Tennigkeit is managing director of UNIQUE land use and timber sector advisory and forest management Company, Germany. He is a research associate of ICRAF-China, involved in the AFD and GIZ walnut projects in the region and the company has substantial experience with value chain research and cluster development.

In February 2014 Timm Tennigkeit took part in a fact finding mission for the elaboration of an international research project on Agroforestry driven landscape restoration and rural poverty reduction under consideration of climate change effects in the walnut areas of Southern Kyrgyzstan. The main deliverables of the mission was finalizing and agreeing BEAF project proposal for ICRAF/UCA. The fact finding mission was conducted within FLERMONECA project in the frame of biodiversity conservation in the walnut forest.

1. Walnut forests in southern Kyrgyzstan were a pilot area for the implementation of joint forest management approaches for several years. Could you please evaluate the results of their implementation (even though you have spent only few days there)? How do you assess the condition of the forest now?

**Dr. T. Tennigkeit:** My impression from the short visit is that Joint Forest Management is still at an early stage. A joint vision for forest conservation and management is lacking, key stakeholders present different versions of the existing land use arrangements – indicating a lack of transparency. Even amongst environmentally concerned stakeholders there is no interest largely due to the lack of perceived incentives to replant walnut trees within existing forests. The problem is aggrieved by the fact that walnut resources are degrading rapidly and the walnut forests are gradually transitioning into open parklands.

2. What is the impact of climate change on the walnut forests of Kyrgyzstan and what can be done to prevent or reduce the negative consequences? Where do we have knowledge gaps?

**Dr. T. Tennigkeit:** The recently published climate change impact study regarding livestock in Kyrgyzstan indicates that the vegetation period will start earlier, mean maximum temperatures will increase by 2-2.5°C and annual rainfall will also slightly increase until 2050. Particularly the increasing summer temperature and higher frequency of heat waves will have negative impacts on rainfed walnut production. Walnut farmers in the region already indicate that walnut trees increasingly suffer from water stress in the summer. Walnut kernels turn red without sufficient watering, which reduces their market value. Trees may even drop their fruits due to heat stress. The higher spring temperatures and hence longer vegetation period in general is positive, but fruit and walnut trees are already suffering from late frost events. The frequency of late frost events may even increase. However, the impact of climate change on walnut phenology, yields, fruit quality and pest and diseases (in particular Gypsy moth attacks) is not well studied and research that tests appropriate response measures to increase the resilience of walnut ecosystems is lacking.

3. An illegal logging and use of forest lands for grazing by livestock are called among the main causes of degradation of walnut forests of Kyrgyzstan. What, in your opinion, is more destructive and how to resist it?
Dr. T. Tennigkeit: From the interviews it seems that uncontrolled grazing is mainly preventing natural walnut regeneration and is the most crucial degradation factor. Currently incentive systems are not in place to control grazing. According to the late Noble Price Winner in Economics Elinor Ostrom, 8 design principles are required for successful common resource management:

1. Clearly defined boundaries (effective exclusion of external un-entitled parties);
2. Rules regarding the appropriation and provision of common resources that are adapted to local conditions;
3. Collective-choice arrangements that allow most resource appropriators to participate in the decision-making process;
4. Effective monitoring by monitors who are part of or accountable to the appropriators;
5. A scale of graduated sanctions for resource appropriators who violate community rules;
6. Mechanisms of conflict resolution that are cheap and of easy access;
7. Self-determination of the community recognized by higher-level authorities; and
8. In the case of larger common-pool resources, organization in the form of multiple layers of nested enterprises, with small local CPRs at the base level.

Based on my interviews and the key principles for successful common resource management, pre-conditions for JFM seem to be not in place yet. Supporting the creation and reinforcement of such institutions may also reduce illegal logging, as communities will be in a better position to control illicit forest destruction stemming both from within the community and by outsiders.

4. What approaches and technologies for effective forest management exist in the world? Which of them, you think, could be suitable for use in Kyrgyzstan to restore walnut forests?

Dr. T. Tennigkeit: This is a very broad question. Therefore, please let me summarize first the current situation. The Kyrgyz Republic has about 44,000 ha of walnut forests including the largest contiguous area of walnut-fruit forests in the world, which is considered a biodiversity hotspot of international significance. These remaining forests have high conservation and biodiversity value and thus should be sustainably managed, including through the establishment of a high protection zone (along the lines of IUCN protected area management category one) for gene conservation and assisting the natural regeneration through the introduction of controlled rotational grazing systems in extensively managed zones. In parallel, new intensively managed walnut agroforestry systems – outside the existing natural walnut forests – should be established to improve local people’s livelihoods, to reduce erosion and reduce pressure on the forests under protection. Considering about 50% of the local investment is from remittances, it will be important to attract investments from the Kyrgyz diaspora into agroforestry systems.

In general, it is difficult to combine the dual objectives of managing landscapes for natural forest preservation (or maintaining cultural landscapes) and sustainable intensification of agricultural production. For example, most natural tea forests in China or natural Arabica coffee forests in Ethiopia have been converted into tea and coffee plantations with low biodiversity, unless strong governance and appropriate safeguards are in place. However, regional marketing where biodiversity conservation improves the region’s brand value and thus raises the price for all products from the region are promising concepts. This has been successfully demonstrated in the Kaiserstuhl, a famous wine growing region in the upper Rhine Valley in Germany. This must be combined with area certification schemes that allow products from biodiversity areas to be sold at premium prices.

5. Could you, please, give an evaluation of the forest institutional, legal framework of the Kyrgyzstan? Does the Kyrgyz forest legislation need to be reformed or improved?

Dr. T. Tennigkeit: From my observations the role of communities is not well addressed in the current forest legislation. However, this requires a broader participatory process to develop a joint vision before the forest legislation can be amended. At the same time, legislative amendments need to be informed by successful pilot implementation. As outlined before, a new forest legislation should consider the eight general design options for successful community engagement in natural resource management. Tenure issues, amongst others, will need to be clarified and the Leskhoz system needs to be reformed to better serve conservation as well as social and economic development objectives. Important will also be to have functioning institutions that build capacity and structure incentives for local people as well as the private sector to make long-term investments in agriculture and forestry.
6. You have worked for some years in China on rehabilitation of degraded forest land. What experiences can Kyrgyzstan learn from?

Dr. T. Tennigkeit: China has established over 300,000 ha of walnut agroforestry systems within the last 10 years. Hence there are a number of technical and institutional innovations that may inspire farmers and policy makers in Kyrgyzstan. The forest land tenure reform providing households with different types of forest certificates can also provide important lessons for Kyrgyzstan. Depending on the local context, some Chinese farmers received individual small forest plots and are managing them rather inefficiently or not at all, while others established cooperatives that successfully developed forest enterprises, including timber processing plants, with each farmer having a share in the business. However, there are also cases where local farmers lost all formal or informal forest user rights to private companies in a dubious process. In parallel state forest enterprises were restructured by separating the forest management from the forest supervisory and various welfare mandates.

7. What, in your opinion, the state of scientific basis in Kyrgyzstan concerning mix walnut fruit system? What perspectives exist for its development? What could be in your eyes be the benefits from cooperation with international research centers? On which aspects should be focused?

Dr. T. Tennigkeit: There is a significant amount of high quality research that analyses conservation and biodiversity aspects related to natural walnut-fruit forests. This is extremely useful as a starting point to develop a conservation and sustainable management vision for these highly important cultural landscapes. However, a limited amount of co-innovation research exists to identify and demonstrate proof of concept for future development options for farmers. Hence in the framework of a global call for agricultural research proposals financed by the German Ministry of Economic Cooperation and Development, my colleagues and I propose the testing of co-innovation research on agroforestry for landscape restoration with a focus on walnuts in Central Asia. This research would target Southern Kyrgyzstan and Yunnan, Southwest China.