Laboratoire d'Excellence ARBRE
Recherches Avancées sur la Biologie de l'Arbre et les Ecosystèmes Forestiers
SwissForestLab
the Swiss forest network to promote excellence in forest ecosystem research

Call for proposals 2022

Deadline for submissions : 31 october 2021

Labex ARBRE and the SwissForestLab agreed to share this call with an emphasis on the call for a common, bilateral project proposed by teams from ARBRE and from SwissForestLab. Such common proposals will be submitted to and assessed by ARBRE and the SwissForestLab in a unique and common procedure described below, using the forms developed by Labex ARBRE for its annual call for proposals.

1. Content and priorities of the 2022 call for proposals of Labex ARBRE in cooperation with SwissForestLab.

This 2022 call of Labex ARBRE aims at supporting original projects corresponding to the main topics developed in the program of ARBRE with an emphasis on potential breakthrough projects, or projects presenting a strong potential for innovation, training or outreach.

A particular attention will be given to (i) projects strengthening the international strategy of Labex ARBRE, in particular with members of the network Nancy-Freiburg-Zürich (NFZ.forestnet); (ii) projects demonstrating an involvement with RD&I in agreement with the French plan "Research and Innovation 2025 in the Forest-wood chain" and (iii) projects of training and dissemination that will enhance our links to industry and society.

In addition, in the application for the joint project co-funded by Labex ARBRE and the SwissForestLab both the Swiss and the French contributing teams need to demonstrate a strong mutual cooperation and a coherent research plan.

1.1. Eligible research/outreach topics

The research/outreach projects should address one or several of the main challenges described below (see also Annex 3 and 4):

- *Physiological, cellular and molecular responses of trees and associated micro-organisms to environmental constraints and perturbations ;*
- *Functional ecology, biogeochemistry, structuration processes in the plant and microbial communities in forests ;environmental genomics ;*
- *Ecosystem services (soils, biodiversity, carbon, water, recreational value) ; adaptation of forests to climate change : assessment at different scales and dynamics ;*
- *Adaptive silviculture and management : dynamics of forest stands ;*
- *Risk and insurance modelling (ecology, silviculture, economy, pluri6disciplinary and multi-risk approaches);*
- *Development and assessment of new products and processes (qualification and non-destructive control, chemistry, building, recycling and detoxification) for an improved valuation of local resources (broadleaved wood, small or large round-woods, recycling and use of by-products) ;*
- *New networks for bioeconomical valuation of forest products (environmental and economic assessment, life cycle analyses) in the context of adaptation to changing resources and markets.*
- *Strengthening of citizen science for forests.*

LABEX ARBRE and SwissForestLab will jointly support a common project enabling for instance to recruit two postdocs for a total of 160k€ (80 k€ SwissForestLab + 80 k€ ARBRE). This particular project should focus on the recent forest decline episodes due to climate extremes in temperate European forests) and address Labex ARBRE challenges (Annex 3) and SwissForestLab research topics and questions (Annex 4). This project should, whenever possible, include predictions based on the currently available climatic scenarios. Such proposal need be submitted to the current call following the same procedure than the internal ARBRE projects.

1.2.   Training and outreach.

A priority of Labex ARBRE is the promotion of a tight coupling between research and training, based on the research activities and the expertise of ARBRE teams. A particular interest will be devoted to training through "Summer Schools", and to project that involve different publics (professionals, schools, citizen), particularly through citizen science approaches.

2. Project types and financial support.

In the frame of the 2022 call for proposals, Labex ARBRE will support :

- **5 innovating projects that will each be granted 60.000 € maximum** which corresponds to the funds for a postdoctoral researcher of for an engineer during 12 months, or to consumables, travel expenses, small equipment and work force.
- **One innovative project in cooperation with SwissForestLab will be granted 80.000 €** by ARBRE and the same amount from SwissForestLab (**total: 160.000€**).
- **10 starter projects granted each with 10.000€ maximum** (consumables, travel expenses, small equipment, working force…).

PhD contracts will no longer be supported for administrative reasons (the current Labex ARBRE contract ends soon).

3. Eligibility criteria

3.1.   Criteria

Innovating projects: A special attention will be given to projects implying international cooperation, (like in the NFZ.forestnet network). However, ARBRE funding can only be allocated to member teams of ARBRE, and cooperating teams must contribute their own financial support (for instance by SwissForestLab in the case of the common project ARBRE-SwissForestLab).

We strongly advice that proponents contact ARBRE's workpackage leaders as well as the leaders of SwissForestLab (when involved) before submitting the proposals.

All proposals should take into account the principles of gender equality in the structure of the project (offering equal opportunities to all genders in scientific leadership and in all activities), as well as in the outreach of the projects (equal opportunities between genders in the potential use of the results).

Coordination of projects by early stage researchers is strongly encouraged.

3.2.   Expenses (this applies only to the financial contributions of ARBRE).

Eligible expenses (they conform to the rules of Agence Nationale de la Recherche):
- **Consumables** including small equipment below 4 000 € tax free ;
- **Labour directly involved in the project** (post-doc contracts, short term employment contracts, or any other expense for short term personal costs).

Non eligible costs: equipment above 4000 €.

Co-financing by external bodies (ANR, SNSF, European projects, ADEME, Région Grand'Est, any other public or private body) is encouraged. This applies in particular for the salary of post-doc researchers.

4. Proposal assessment.

Innovative projects will be analysed and assessed by international experts selected by the board of Labex ARBRE and, in the case of common projects, by the SwissForestLab. Starting projects will be assessed and selected by the members of the board of Labex ARBRE, and if needed, by international experts. The provided expertise will help the Board of Labex (complemented by representatives of SwissForestLab) make decisions for the final selection of the projects. Every proposal leader should provide five names for potential experts for his proposal (precise names, disciplines and contacts including email).

5. Proposal language

Research and outreach projects should be written in English. Training and dissemination projects may be presented in French.

6. Schedule and modalities

- Launching the call for proposals: september 2021.
- Deadline for proposal submission: october 31 2021 by e-mail to : labex-arbre-nancy@inrae.fr
- Proposal forms: see Annex 1 & 2.
- Project selection: January 2022.
- Payments: starting March 2022.

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Recherches Avancées sur la Biologie de l'Arbre et les Ecosystèmes Forestiers

SwissForestLab
the Swiss forest network to promote excellence in forest ecosystem research

Call for Proposals 2022
Innovative research or outreach projects
<180.000€ for the common ARBRE-SwissForestLab proposals
Deadline: October 31, 2021

Title of the proposal:

Acronym:

Project Leader Labex ARBRE (name and Research Unit):

Project Leader SwissForestLab (name, Institution and Research Unit):

Co-applicants (names Institutions and Research Unit):

ARBRE work package:

Other ARBRE work package(s) concerned:

Main Research Topic(s) and Question(s) of the SwissForestLab concerned:

Start and end dates of the project:

Confidential reviewing: yes / no

A. Executive summary (1 page max.)

B. Research proposal (10 pages max.)
- **Context and background information** (1 page max.)
- **Rationale for the proposed research and specific objectives** (1 page max.)
- **Description of the proposed research** (3 pages max.): *Scientific Information (including novelty of the project), Technical Information, Available Resources, GANTT Chart…*
- **Contribution to** the different Arbre work-packages (cf Annex 3) and Research Fields and Questions of the SwissForestLab (cf. Annex 4)
- **Benefits for ARBRE and SwissForestLab** (1 page max.): *Anticipated scientific and socio-economic benefits; Stakeholder involvement/Facilitating knowledge translation to end-users*
- **Research teams** (1 page max.) including *competence of the PI's to perform this work*
- **Management** (*Coordination, Data & Resource Sharing, Outreach*) (1/2 page max.)
- **Complementarity between the French and Swiss partners**
- **National and international networking**
- **Financial Information** (1/2 page max. each). All costs should be indicated Tax Free.

> *Salaries; Small equipment (<4000 Euros); Travel expenses; Requested or current supplemental funding; Others.*

Do not forget to join the funding plan (Excel Document to be downloaded from the Labex ARBRE website)

- **References**

Please send your application in <u>word format</u> to <u>labex-arbre-nancy@inrae.fr</u> and send name and address of five foreign referees with no conflict of interest

WP 1 - Integrated Biology of the Tree-Microbiome System

Strategic objective: Understanding tree–microbiome interactions, nutrient allocation & stress molecular/physiological responses in a changing environment

Keywords: Microbiome, Nutrition allocation, Water Metabolism, Abiotic constraints

- **Task 1.1** – Deciphering molecular events governing tree-microbe interactions (WP2)

- **Task 1.2** – Assessing tree molecular & physiological responses to environmental constraints (WP2 & WP3)

- **Task 1.3** – Studying How the microbiome is shaping tree development and nutrient allocation (WP2)

- Building an integrated understanding of the main drivers controlling the interactions between trees (poplars, oaks) and their microbial partners in a changing environment

- Developing new –omics tools for investigating tree/microbe biology *in situ in Long Term Observatories*

WP2 - Forest Ecology in a Changing and Managed Environment

Strategic objective: Providing stakeholders and society with best knowledge and modelling tools to take informed decisions on forest management in a changing environment.

WP2 will study How tree- and associated microbial diversity can change the resilience of forest ecosystems to natural and human disturbances and how the interacting cycles of carbon, water and nutrients shape the functioning of whole ecosystems.

Keywords: Ecosystem, Functional diversity, Biogeochemical cycles, Resistance and resilience, Management practices

- **Task 2.1** – Studying the impact of functional diversity and interactions between soil microbes, plants and their environments on forest ecosystem functioning (WP1)
- **Task 2.2** – Understanding the biogeochemical cycles (carbon, water, nutrients) in the resistance and resilience of forest ecosystems
- **Task 2.3** – Assessing the impact of management practices and other land use changes on community ecology, forest ecosystem functioning and provision of ecosystem services (WP3, WP4)

  - Assessing the impact of genetic and functional diversity on the ability of ecosystems to overcome constraints
  - Elucidating the impact of nutrient and water availability on carbon allocation in trees and carbon sequestration in soil.
  - Developing new decision-making tools to analyse the impact of management scenarios on biomass production, carbon storage, wood quality, soil fertility, water quantity and quality.

WP3 - New Wood Products, Services and Uses for a better Life Cycle

Strategic objective: Developing new scenarios for improving the availability of wood resource, clean transformations, recycling and bio-economy

Keywords: Wood/biomass, Transformation, Construction, Recycling, Management

- **Task 3.1 -** Sustainable wood and biomass transformation for bio-economy. Biodiversity assessment (WP2). Biopolymer deconstruction. Thermal deconstruction (WP2). Wood durability and biodegradation (WP1)
- **Task 3.2 -** New approach and new usages for wood construction … no additives (paint, glue...), new processes for assembling wooden walls
- **Task 3.3 -** Recycling wood material and biomass. New source of biomass (decontaminated), energy production and soil amendment (WP1, WP2)
- **Task 3.4 -** Management of forest wood chains (WP2, WP4)

- Developing new wood products and new processes for bio-based molecules production; developing new preservation process
- Developing new innovative constructive systems
- Developing new source of (decontaminated) biomass for energy production and soil amendment
- Developing innovative tools to evaluate CO_2 balance and criteria of sustainability

WP4 – Forest Bioeconomy: Actors, Territories, Resources and Economic Sectors

Strategic objectives: (i) To further the analysis of forest owner/manager behaviour in terms of production choices and motivations, and societal preferences in terms of demand of ecosystem services and new bio-based products, (ii) To study the technical innovations from a bio-based industrial economics perspective, (iii) To understand the resilience of forest socio-ecosystems to various changes through effective adaptation strategies.

Keywords: Bioeconomy, forest sectors, public policies, innovations, adaptation and resilience

- **Task 4.1 -** Building forest information systems for bioeconomy and the support to public policies (WP2)
- **Task 4.2 -** Understanding and modelling the behaviours and preferences of stakeholders and the citizens (WP2)
- **Task 4.3 -** Supporting innovations in forest management and the wood industry for a performing bioeconomy (WP3)
- **Task 4.4 -** Studying adaptation strategies of stakeholders and resilience of forest socio-ecosystems in response to multiple changes (WP2 & WP3)

- Analysing and assessing public policies according to different scenarios of forest management (including potential intensification of harvesting practices)
- Extending forest sector modelling accounting for stakeholders capacities to innovate in a bioeconomic perspective and for the competitiveness of forest industry
- Developing new methodologies coupling socio-economic modelling and environmental assessment to study the resilience of forest socio-ecosystems

Research Fields

Climate Change effects on forest ecosystems	Biodiversity and ecosystem functioning	Land-use change and its long-term legacy

Key Questions

Key question 1 (Biogeochemistry): Forests are the most important terrestrial carbon sinks and important player for the water cycle at present – that might change – how will management and global change affect forest carbon, nutrient and water cycles and their interactions and what will be the consequences for global climate and water relations and what are mitigation strategies?

Key question 2 (Acclimation and Adaptation): Extreme events are an important driver of forest dynamics structure and function and expected to increase in the future - How is the development over time scales? How do abiotic and biotic extreme events interact? Are the forests able to acclimate and adapt and what is the role of management and biodiversity for acclimation and adaptation?

Key question 3 (Neobiota, and novel and native pests and diseases): Global trade fosters the spread novel pests and diseases as well as organisms in general world-wide. What are the most dangerous species and their epidemiology? How can they be controlled and which management practices can be applied to increase forest resistance? How does climate change and introduced/novel species affect native species interactions in our forests?

Key question 4 (Management and Biodiversity): How can we use management practices to sustain, improve and/or optimize the provision of ecosystem services (including multifunctionality)? How is the relationship between biodiversity, forest management and ES?

Key question 5: (Feedbacks across scales): How do feedbacks occur across scales and among structures and functions in forest ecosystems?: What is the role of above and belowground interactions, plant-soil, plant-climate and plant- microbiome feedbacks?