GTTN

Global Timber Tracking Network

Developing an expert database and a reference database in GTTN

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www.globaltimbertrackingnetwork.org

GTTN aims

GTTN aims to be a global initiative with the primary aim of the promotion of the integrated use of innovative technologies such as DNA fingerprinting and stable isotope analysis together with other existing technologies to combat illegal logging and associated trade worldwide.

Building on the results and experiences of the first phase, GTTN II will continue to further develop and expand the network, seek new partnerships, new funding sources and (active) collaboration.

GTTN will contribute to the development of two main services: an **Expert Catalogue** and a **Reference Database**

Greetings from Richard (phase 1)

- from GTTN progress report 2013

Illegal logging is currently a 10 to 15 ***billion*** dollar a year problem.

GTTN scientific approach needs to have scientific credibility, merit and potential as a tool to support the forensic prosecution of traffickers of illegally logged timber.

There is also a question of timeliness: how long can the world afford to wait to arrest illegal logging activities, when thousands of hectares of virgin tropical forests are disappearing each year?

The past and present

GTTN phase 2, under coordination of EFI, is continuing the work that was started in GTTN phase 1, under coordination of Bioversity.

Several different service prototypes were created by Richard Bruskiewich (then with Bioversity), with the software solution changing over time as the needs of potential users got further elaborated.

WRI asked Richard to simplify the last GTTN prototype, the result of which was the model for the solution that was re-implemented by WRI as the service providers directory (SPD).

WRI is planning to launch the SPD as a tool under its Forest Legality Alliance website http://www.forestlegality.org

GTTN aims - two main services

The Expert Catalogue: interested

- to provide **external users** (e.g. timber industries, public authorities) with the
- **information on which technology (**wood anatomy, DNA test, stable isotopes) is appropriate and available to check **their specific claim** (declared tree species and / or geographic origin) **and**
- **whom to contact** to perform the testing along with the contact's expertise (e.g., expertise working on X species)

The Data Repository:

- to provide **internal users** (groups that:
  - have put their data into the data base,
  - signed a data sharing agreement,
  - successfully participated in ring tests for standardisation and
  - are ready to provide the lab services) with
- safe password protected access to a data repository centre on geographic reference data (genetics + isotopes).

The Expert Catalogue

The GTTN database should **provide users** along the supply chain **with information on species identification and the verification of the origin** (country, region, concession) of wood and wood products. (Expert database)

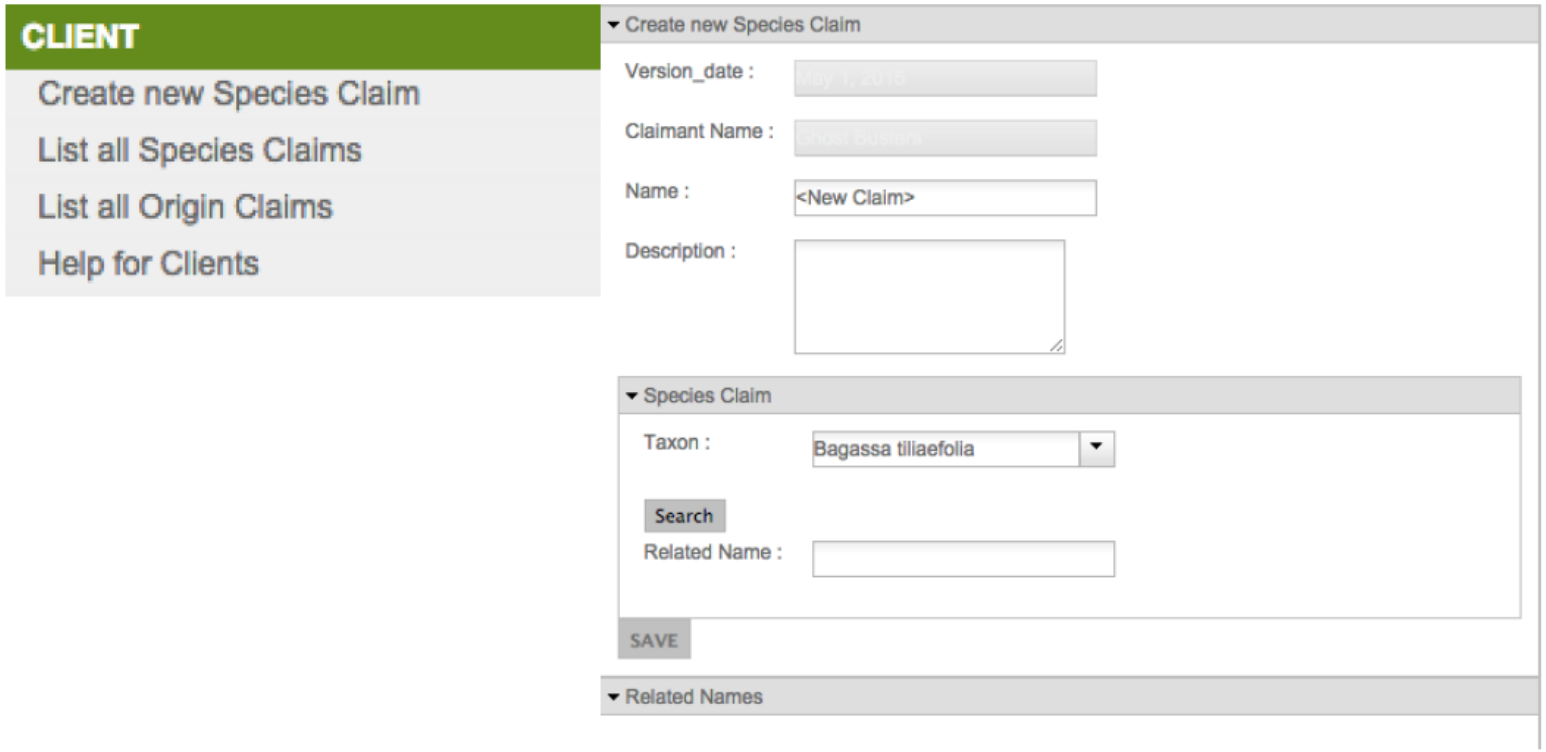
Furthermore, it should **provide information on available scientific methods and tools** (genetics, stable isotopes, spectrometry and wood anatomy), **and contact information** on certified(/participating?) labs for sample analysis.

An important database aspect is ensuring that the database and the **content are *secure and cannot be misused***.

The development of the expert database should be a priority. ***There is a real need for enforcement authorities to know from where they can get information.***

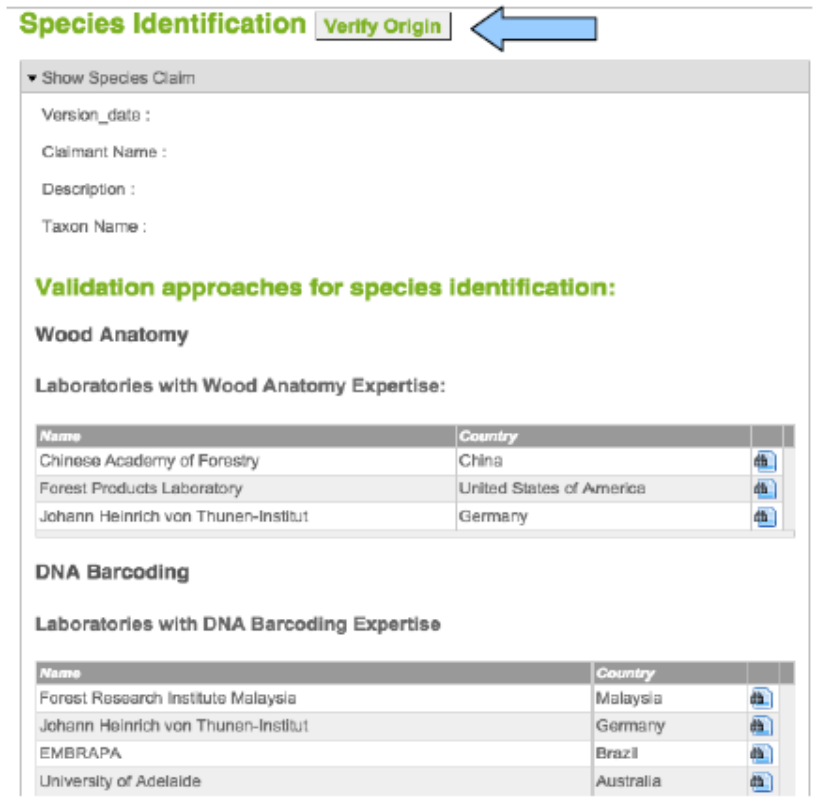
From GTTN phase 1 - a **claim based GTTN prototype – species claim**

Once logged in as a user, a new menu section, CLIENT, will show up on the task bar. As a Client, you may choose to "Create a new Species Claim".



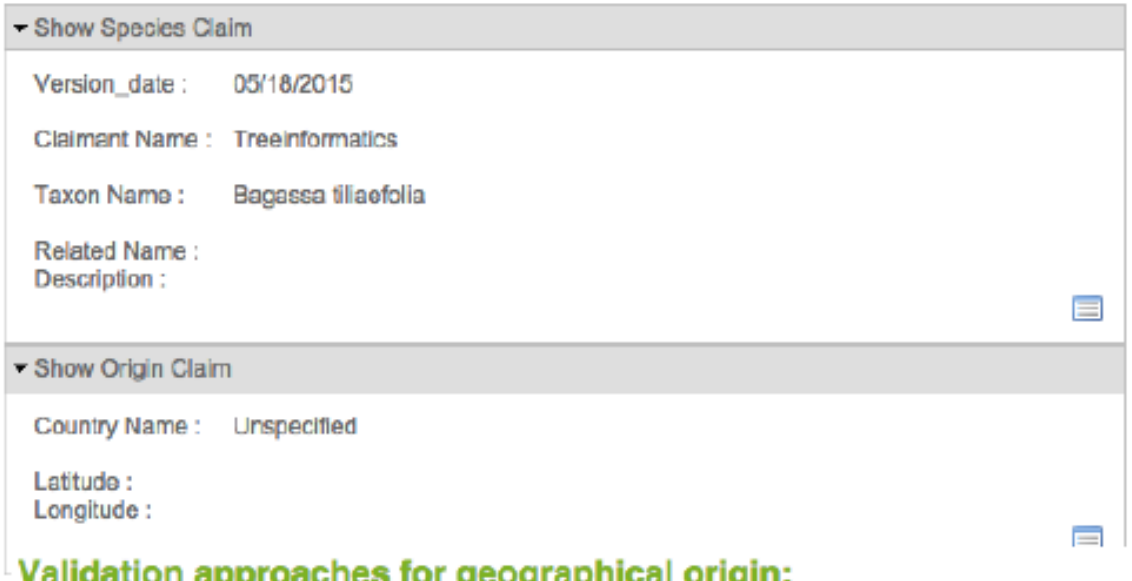
Under "Create new Species Claim", the "Version_date" and "Claimant Name" will already be set to the current date of entry and the user's organization name.

You will then be directed to a validation page. On this example page (below), you are given two approaches for species identification (Wood Anatomy and DNA Barcoding), as well as the laboratory names and their respective countries. Clicking on the binocular button on a given laboratory entry line will display the contact details for the lab.



If you (optionally) also wish to validate the timber provenance, then click on "Verify Origin" to specify a claim for the geographical origin of the species. Select the country or specify the latitude and the longitude[1].

Geographical Origin



Validation approaches for geographical origin:

Stable Chemical Isotopes

Laboratories with Chemical Isotope Expertise:

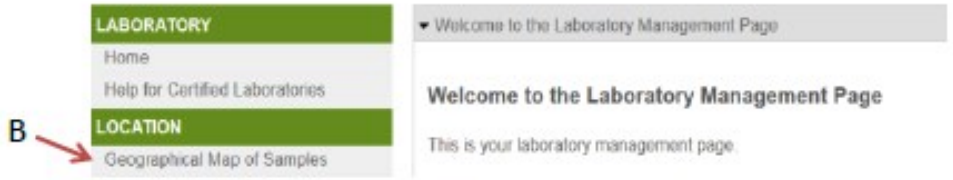
Name	Country
Agroisolab	Germany
FERA	United Kingdom
Jesophinium	Austria

Genotyping

Laboratories with Genotyping Expertise

Name	Country
Johann Heinrich von Thunen-Institut	Germany
University of Adelaide	Australia
EMBRAPA	Brazil
Forest Research Institute Malaysia	Malaysia

A claim based GTTN prototype – Origin claim



Type in the taxonomic name of the species (i.e. *Milicia excelsa*) you are searching for in the filter bar above the map (1).

A number within a circle will pop up (2). This represents populations or samples that are clustered around that region. By clicking the circle, you can zoom in. When you zoom in, the circle will explode into more circles (3). Each number represents the density of populations or samples found within the region. When you zoom in, single data points show up as labelled blue balloons or equivalent, (4).

A claim based GTTN prototype – reference data browsing

The WRI adaptation of GTTN work: The Service Providers Directory

- The data contained is the TRAFFIC data, appended to by WRI with IAWA data.
- An update of the TRAFFIC dataset (by Traffic) has been under way, which we wish to incorporate
- In the spirit of the GTTN aim to *"continue to further develop and expand the network, seek new partnerships, new funding sources and (active) collaboration"* - WRI and EFI have teamed up to together launch and improve the Service Providers Directory and for GTTN to design the necessary extensions to the inclusion of reference data and an interface for its access.
- the following slides present thew WRI Service Providers Directory as it's development version stands currently (only sample datasets used for slides)

Service Providers Directory

Species Names

- Any -

Helper description of filter (optional)

Common name

- Any -

Filter description text

Expertise

- Any -

Helper description of filter (optional)

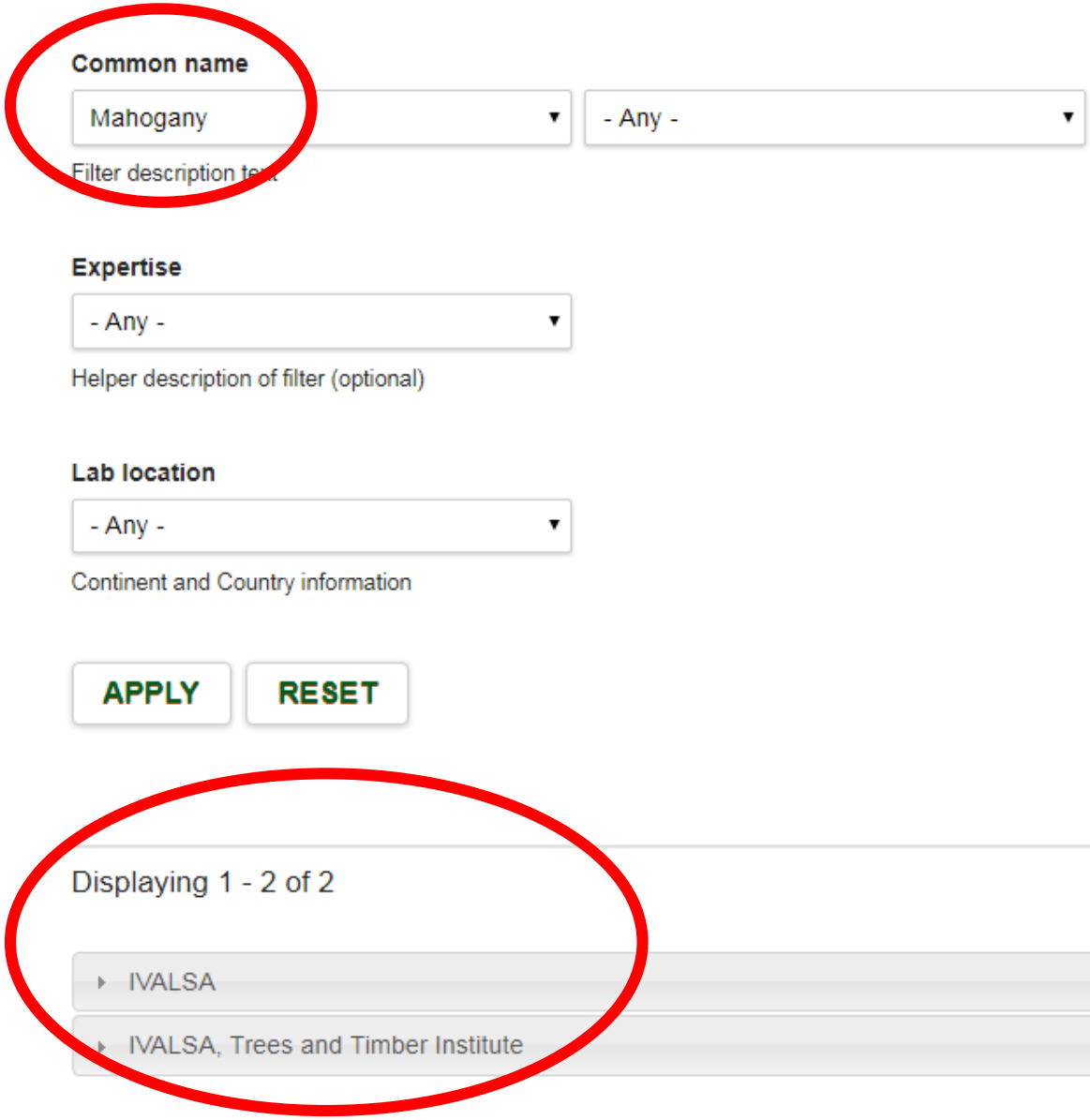
Lab location

Europe | - Any -

Continent and Country information

APPLY | RESET

Service Providers Directory



Service Providers Directory

Displaying 1 - 2 of 2

▾ IVALSA

- Contact Details
- General Details
- Microscopic Slides
- Samples for Exchange
- Sample Availability
- Samples Available
- Samples Wanted
- Sample Catalogue
- Samples List
- Testing Expertise
- Testing Expertise Species
- Remarks
- Additional Details

Person:

Dr. Nicola Macchioni, Head Of The Wood Anatomy Laboratory At Ivalsa - Cnr, Simona Lazzeri, Laboratory Technician, Dr. Alan Crivellaro, Contract Researcher

Email:

lazzeri@ivalsa.cnr.it, crivellaro@ivalsa.cnr.it

Address:

Istituto per la Valorizzazione del Legno e delle Specie Arboree - Consiglio Nazionale delle Ricerche (Trees and Timber Institute - National Research Council), (FLw), Via Madonna del Piano, 50019 Sesto Fiorentino (Florence). Italy.

City:

Florence

▸ IVALSA, Trees and Timber Institute

Service Providers Directory

Lab location

Europe | - Any -

Continent and Country information

APPLY RESET

Displaying 1 - 13 of 13

- Customs Port of Rotterdam and Customs Laboratory
- European Plant Science Laboratory (EPSL)
- IVALSA
- IVALSA, Trees and Timber Institute
- Laboratory for Wood Biology and Xylarium, Royal Museum for Central Africa
- Naturalis Biodiversity Center
- Naturalis Biodiversity Center, Leiden University
- Royal Botanic Gardens, Kew
- Timber collection, National Museum Wales
- University of Natural Resources and Life Science Vienna
- University of Natural Resources and Life Sciences – BOKU
- University of Vienna; Vienna Institute for Archaeological Science (VIAS)
- University of Warsaw Botanic Garden

Service Providers Directory

Expertise

Visual ▾ - Any - ▾

Helper description of filter (optional)

Lab location

- Any - ▾

Continent and Country information

APPLY RESET

Displaying 1 - 15 of 15

- Commonwealth Scientific and Industrial Research Organization
- Commonwealth Scientific and Industrial Research Organization 1
- Customs Port of Rotterdam and Customs Laboratory
- European Plant Science Laboratory (EPSL)
- Facultad de Ciencias Agrarias y Forestales
- IVALSA, Trees and Timber Institute
- Laboratory for Wood Biology and Xylarium, Royal Museum for Central Africa
- Naturalis Biodiversity Center, Leiden University
- Queensland Department of Agriculture
- Queensland Herbarium

Next development steps:

Need to develop a scheme for a less manual data updating practice

A design question - method suitability linkage to availability of reference data?

Counter argument to the above: method availability based on reference data presence could be used by actors to “reverse engineer” and map out where data is not available, and tag shipments according to this info – to ensure that the origin/species could not be validated at point of import to an EU country

The Data Repository

The GTTN database should **provide georeferenced DNA and isotope data** for important (priority) species. (The database is a crucial prerequisite to make available to the world's present data for the application of the methods by industry, academia and regulatory authorities.)

Enter data of public funded research projects into the database (ITTO Africa, ITTO Indonesia), others as per expert survey results

An important database aspect is ensuring that the database and the **content are *secure and cannot be misused***.

The major discussion point here is the **design choice : to build up a distributed system OR a centralised system.**

Design option #1 - a **distributed service**

- A distributed system could use information from external, already existing datasources. The level of understanding that the GTTN database can have on what data these databases contain, depends on the level of metadata descriptions in those services.
- If the records/pages are described by metadata systemetically, the situation is good. A meta data service for this data, is provided.
- Inaccurate or only database level metadata means that we can only have a cursory understanding of the contents → integration potential weak.
- This would allow us to build on other organisations know-how, while they maintain their own data separately
- **RISK**: can a distributed service be safe from external manipulation? If our service relies on external services, perpetrators could compromise the GTTN service by polluting the contents of any external service we are relying on for reference data.

Design option #2 - a **centralized service**

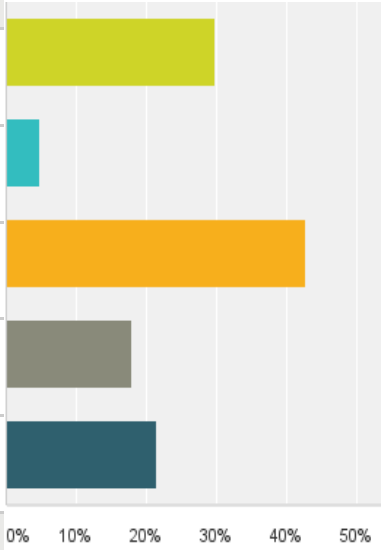
- Better for ensuring security, we control all access and data.
- Still allows the full deposition of data and sharing only metadata
- The database should be a hybrid solution that contains both metadata describing the data available from participating labs by request and also contain actual data with its relevant metadata descriptions.
  - This solution allows e.g. smaller labs to directly deposit their data in the database.
  - If labs are not inclined to share their data openly with everyone, the “data search” interface will lead the to the record describing the data and instead of a “Download data” button, there will be a button to “Send request to lab for reference data”.

Expert identification survey – reference data

Q13: Does your organization have reference data that are relevant for GTTN? If yes, then we will contact you at later stage for more information. If your response concerns more than one dataset, then please indicate any answer that applies.

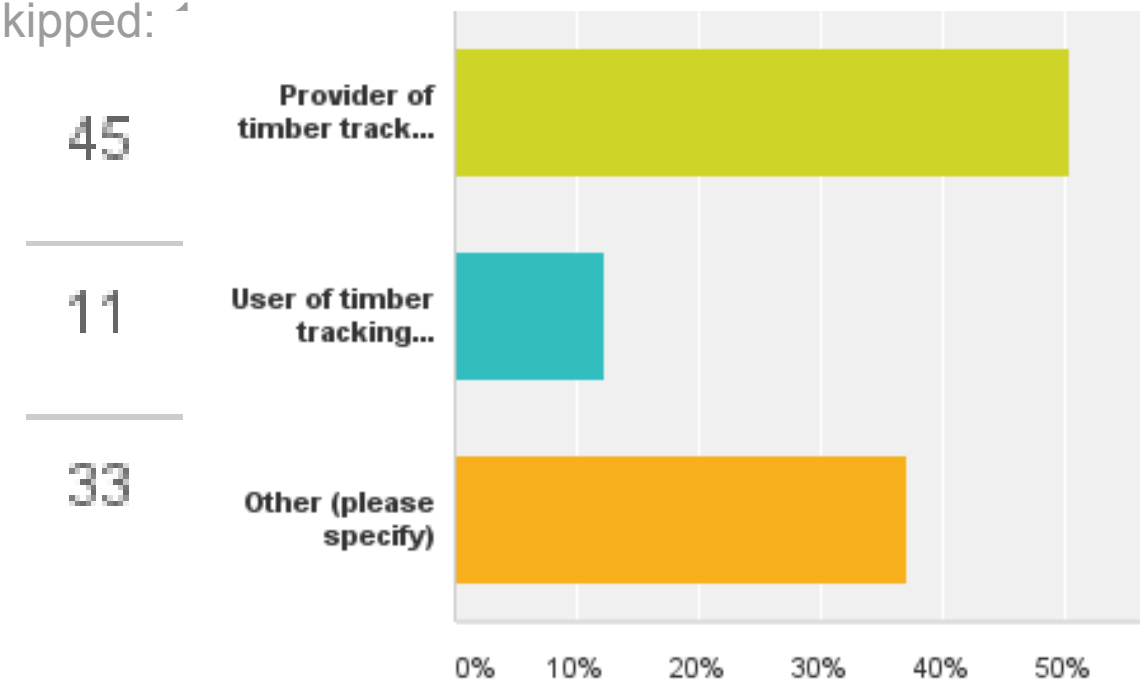
Answered: 84

Answer Choices	
No	25
Yes, but data cannot be shared	4
Yes, and data can be shared under certain provisions	36
Yes, and data are public and freely available	15
Other, please explain:	18
Total Respondents: 84	



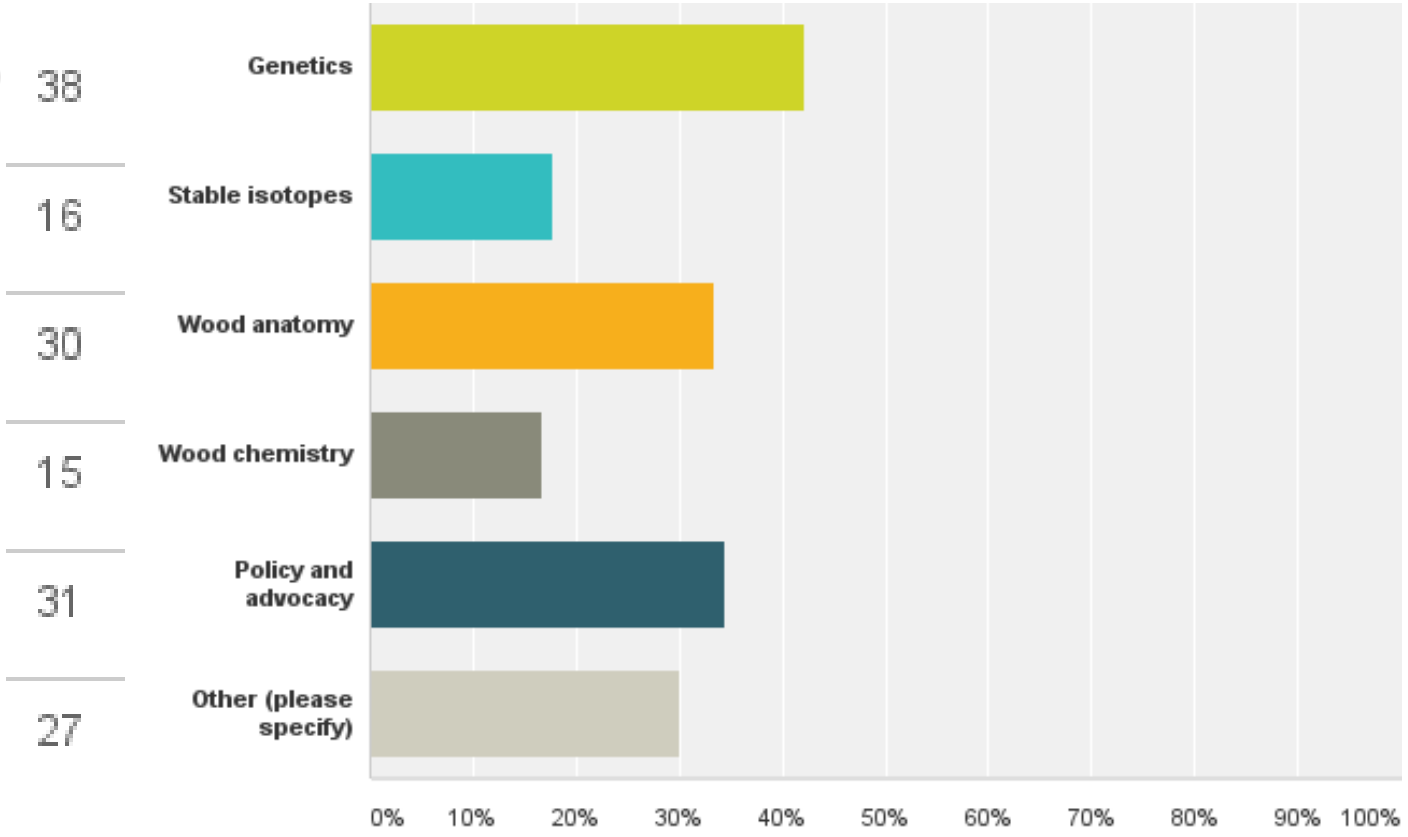
Q7: I am interested in cooperating with GTTN from the point of view of a ...

Answered: 89 Skipped: 1



Q8: Indicate discipline from which point of view you want to contribute:

Answered: 90



Thank you for your attention!