

The role of planted forests in resilient landscapes and a forest-based bioeconomy

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CONSEJO SUPERIOR DE INVESTIGACIONES CIENTÍFICAS



IUFRO Research Group 1.08 [Silviculture for edible NWFP](#)

IUFRO Task Force [Unlocking the Bioeconomy and NTFP](#)

(Planted) Forests in Europe & Ecosystem Services



Provisioning ES (W & NWFP)
Regulating ES (protective & protection)
Cultural ES (recreation, educational, etc.)



66% natural regeneration or expansion

34% planted (incl. regeneration)
 94% considered "semi-natural"
 <4% "plantations" (8 Mha)



23.6% of Europe's forests are in protected areas



Protective forests form 32% of Europe's forests

550 million m³ / year



75% available for wood supply

70% accessible to public



23.6% of Europe's forests are in protected areas



4 000 million € non-wood goods



Multifunctional forests

A forest base for a bioeconomy



Figure 3. Biomass sources and uses in the EU-27 (based on 2017 data⁴⁵, units in tonnes dry matter)

EC 2022. EU Bioeconomy Strategy Progress report

Bioeconomy

b3P: biological Products, Processes and Principles

“**sustainable** production and consumption of goods and services derived from **biological resources**, taking advantage of the **knowledge** of **biological processes and principles**”. [Rodríguez et al. 2017, CEPAL](#)

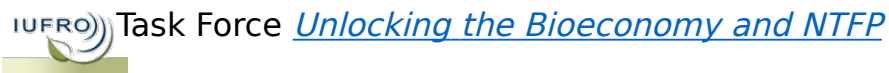


A transition framework for integration of non-wood forest products into the bioeconomy

James Chamberlain¹, Carsten Smith-Hall², Sven Mutke³, Dietrich Darr⁴, Davide Pettenella⁵

SMART INNOVATION
technological,
organisational, regulatory,
social

Fossil fuel-based
linear economy

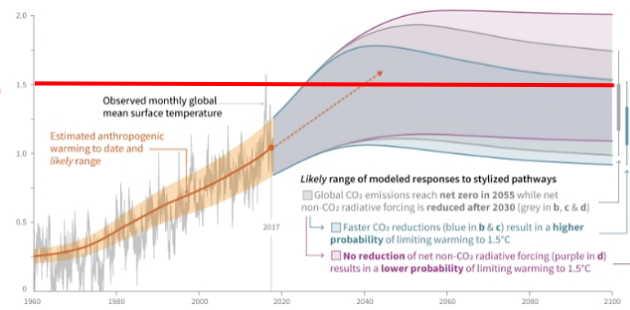


Circular, green,
bio-based economy



Mutke et al., 2018

< 1.5 °C



An essential transition to a bioeconomy, nature-based economy, doughnut economics...

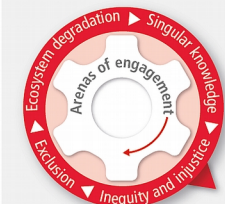
There is a rapidly narrowing window of opportunity to enable climate resilient development

(a) Societal choices about adaptation, mitigation and sustainable development made in arenas of engagement

Dimensions that enable actions towards higher climate resilient development

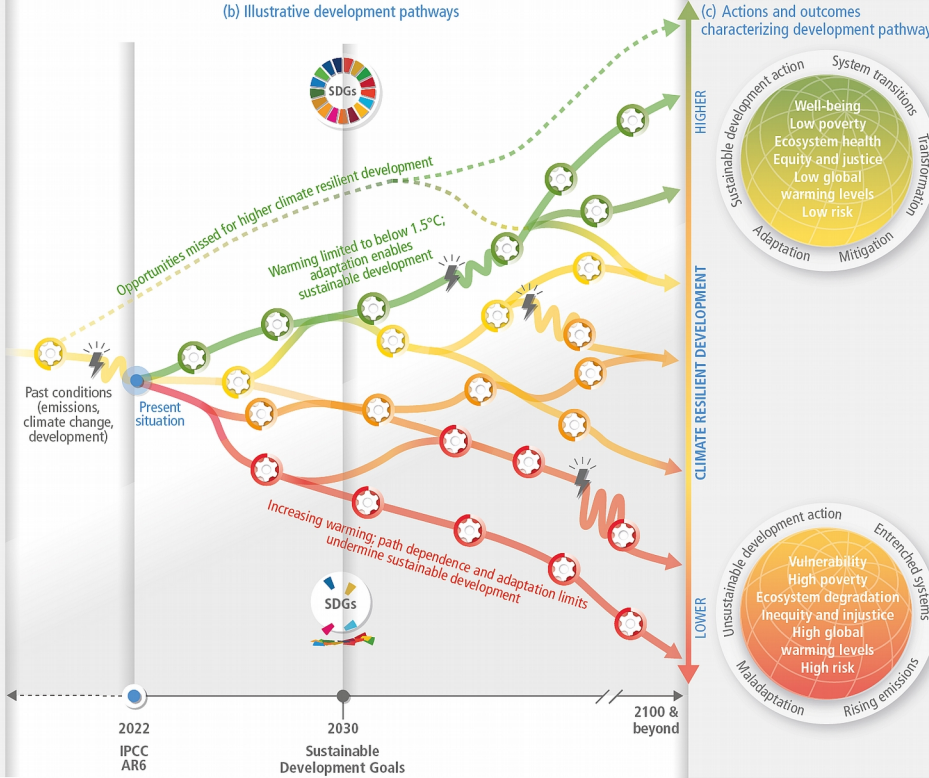


Arenas of engagement:
Community
Socio-cultural
Political
Ecological
Knowledge + technology
Economic + financial



Dimensions that result in actions towards lower climate resilient development

(b) Illustrative development pathways

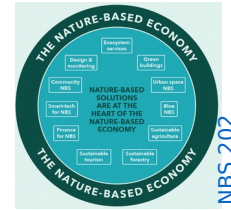


Narrowing window of opportunity for higher CRD

⚡ Illustrative climatic or non-climatic shock, e.g. COVID-19, drought or floods, that disrupts the development pathway

https://report.ipcc.ch/ar6wg2/pdf/IPCC_AR6_WGII_SummaryForPolicymakers.pdf

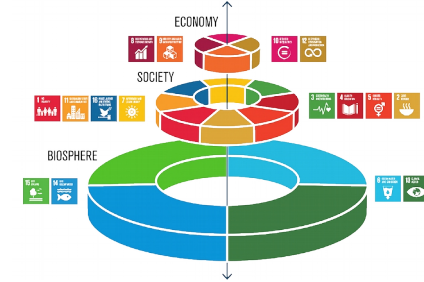
IPCC SR15



NBS 202



<https://doughnutconomics.org/>



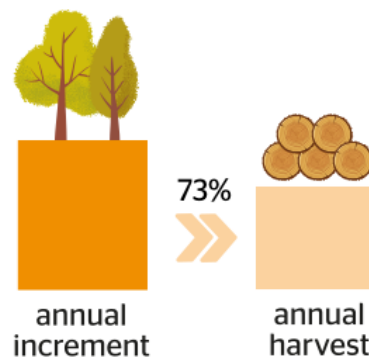
“Pressures on forestry will need ever more reliance on managed forests, particularly **planted forests, in order to satisfy this **increasing demand for wood**.**

The challenge is to do this in a manner that **allows production to remain sustainable for the foreseeable future.**”

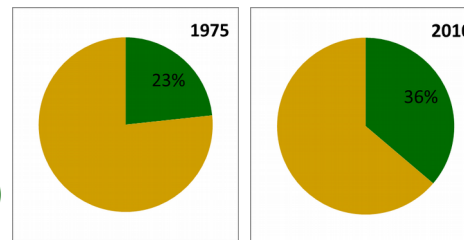
Gardiner & Moore, 2014 <https://doi.org/10.1007/978-94-007-7076-8> 30

Increment in European forests substantially exceeds felling

Every year, more wood grows than is harvested in European forests, leading to the accumulation of growing stock in forests. Net annual wood increment is higher than in earlier periods. Since 1990, it has increased by approximately 25%. The volume of timber harvested has been increasing steadily since 1990. On average, 73% of the net annual increment is felled, thus indicating the sustainability of wood supply from European forests.



**E.g. forests in Spain:
18.3 million ha (and growing)**



**Area +50%
Stocks +100%**

B4EST International Conference *Managing Forest Genetic Resources (FGR) for an uncertain future*
Lisboa 20-23 June, 2022

Session C, Tuesday 21 June

“The forests we want:
Deployment of forest reproductive material (FRM)
for forest-based solutions”

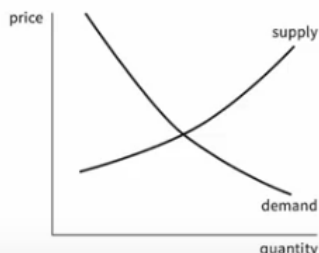
Whom are you breeding for?

**Who will use our growth & yield models,
our decision support tools?**

Is the **forest owner** or manager the **one who takes the decisions?**

Do they make rational decisions, maximising private monetary benefit?

So to say, are they **econs** (link) or **humans**?



<https://doughnuteconomics.org/tools-and-stories/122>

73% of Spanish roundwood come from **eucalyptus, maritime pine and Monterrey pine plantations** (MITECO, 2020), but: abandonment!
(smallholders, rural flight)

2/3 of Portuguese eucalyptus plantations are not managed any more. (Luis Fontes, B4EST D4.9)

20% of Portuguese forest have no known owner any more. (Nuno Calado, CentroPinus)

New challenges for European forests (*previous speakers*)

Climate change, wildfire, increasing incidence of pests & diseases

- do they act limited to a **stand or forest management unit** scale?

If the challenges must be tackled at **higher scales**,

also **forest government and planning** at landscape level will be essential

European Journal of Forest Research
<https://doi.org/10.1007/s10342-021-01358-z>

REVIEW ARTICLE



Opportunities and challenges of *Eucalyptus* plantations in Europe: the Iberian Peninsula experience

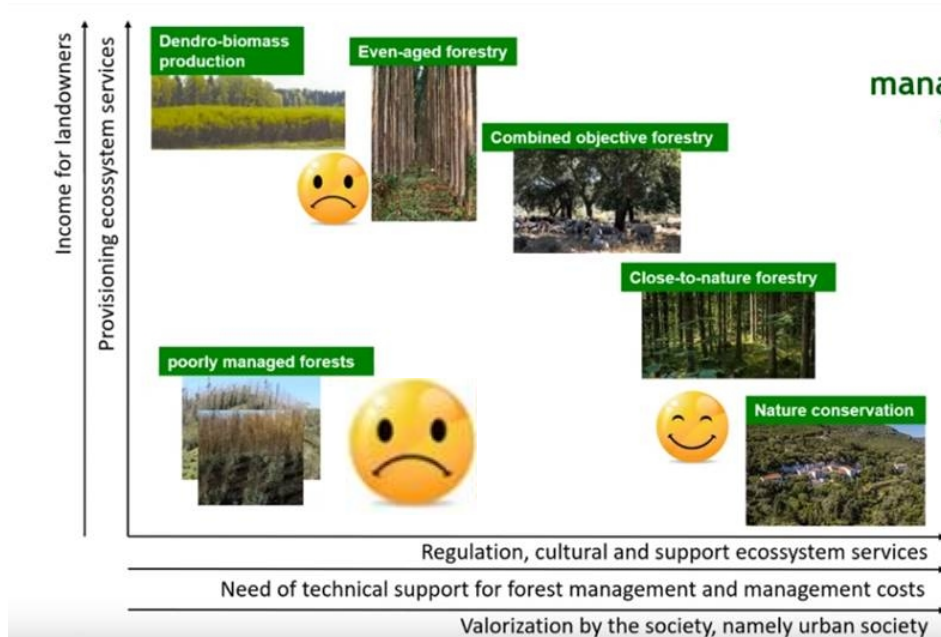
Margarida Tomé¹ · Maria Helena Almeida¹ · Susana Barreiro¹ · Manuela R. Branco¹ · Ernesto Deus² · Glória Pinto³ · Joaquim S. Silva^{4,5} · Paula Soares¹ · Roque Rodríguez-Soalleiro⁶

"New governance models are needed for European forest landscapes",
[...] "including the problem of **poorly managed forests**"

Prof. Margarida Tomé dixit,

EFI ThinkForest webinar *Closer to Nature Forest Management*, April 6, 2022

<https://www.youtube.com/watch?v=lw1NasD22jg>



Forest management at stand level



PROCEEDINGS B
royalsocietypublishing.org/journal/rspb

Research
Cite this article: Feit B, Blüthgen N, Daouti E, Straub C, Traugott M, Jonsson M. 2021 Landscape complexity promotes resilience of biological pest control to climate change. *Proc. R. Soc. B* 288: 20210547. <https://doi.org/10.1098/rspb.2021.0547>

Landscape complexity promotes resilience of biological pest control to climate change

Benjamin Feit¹, Nico Blüthgen², Eirini Daouti¹, Cory Straub³, Michael Traugott⁴ and Mattias Jonsson¹
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²Ecological Networks, Department of Biology, Technical University of Darmstadt, 64289 Darmstadt, Germany
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Check for updates

Increased climate variability as a result of anthropogenic climate change can

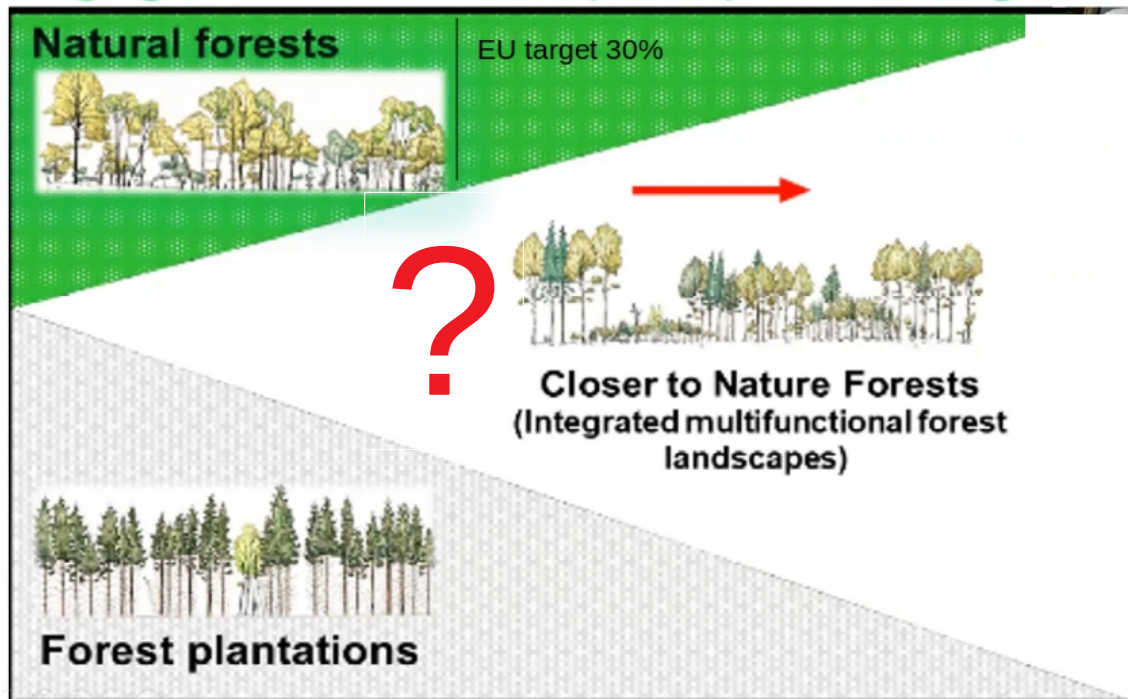
"Landscape approaches are key for forest-based solutions to address SDGs in the Mediterranean"

Picard & Garavaglia, FAO, 2021 https://doi.org/10.1007/978-3-030-63625-8_28



EFI, 2022. From Science to Policy 12. <https://doi.org/10.36333/fs12>

Segregated - - - - - Mosaic (TRIAD) - - - - - Integrated



“Pressures on forestry will need ever more reliance on managed forests, particularly **planted forests**, in order to satisfy this increasing demand for wood [NB: and other Ecosystem Services].

Gardiner & Moore, 2014 <https://doi.org/10.1007/978-94-007-7076-8> 30