







Ine	quality is Rising	a or Staving Ex		EALTH OF	U.S. BILL	IONAIRE	GROWS	931 BILLIO)N (32%) IN	7 MONT	HS
Sha	re of national income g		March 18, 2020 - October 13, 2020								
60	Africa Brazil China Europe		First Name	Net Worth Mar. 18, 2020 (\$ Billions)	Oct. 13 Real Time Worth (\$ Billions)	Wealth Growth Mar. 18 to Oct. 13, 2020 (\$ Billions)	% Wealth Growth Mar. 18 to Oct. 13, 2020	Net Worth Feb. 8, 2019 (\$ Billions)	Wealth Growth Feb, 8, 2019 to Oct. 13, 2020 (\$ Billions)	% Wealth Growth Feb, 8, 2019 to Oct. 13, 2020	Source
	India		Jeff Bezos	\$113.0	\$203.1	\$90.1	79.8%	\$131.0	\$72.1	55.1%	Amazon
50	Middle-East		Bill Gates	\$98.0	\$118.0	\$20.0	20.4%	\$96.5	\$21.5	22.3%	Microsoft
	Russia	∧	Mark Zuckerberg	\$54.7	\$101.2	\$46.5	85.1%	\$62.3	\$38.9	62.5%	Facebook
	US-Canada		Elon Musk	\$24.6	\$92.8	\$68.2	277.4%	\$22.3	\$70.5	316.3%	Tesla, SpaceX
			Warren Buffett	\$67.5	\$81.1	\$13.6	20.1%	\$82.5	-\$1.4	-1.7%	Berkshire Hathaway
40		- F	Larry Ellison	\$59.0	\$80.3	\$21.3	36.1%	\$62.5	\$17.8	28.5%	Oracle
		_ /	Steve Ballmer	\$52.7	\$75.0	\$22.3	42.4%	\$41.2	\$33.8	82.1%	Microsoft
			Larry Page	\$50.9	\$70.0	\$19.1	37.6%	\$50.8	\$19.2	37.8%	Google
30		\sim	Sergey Brin	\$49.1	\$68.1	\$19.0	38.8%	\$49.8	\$18.3	36.8%	Google
			Alice Walton	\$54.4	\$67.9	\$13.5	24.8%	\$44.4	\$23.5	52.9%	Walmart
			Jim Walton	\$54.6	\$67.7	\$13.1	23.9%	\$44.6	\$23.1	51.7%	Walmart
20			Rob Walton	\$54.1	\$67.3	\$13.2	24.4%	\$44.3	\$23.0	52.0%	Walmart
20	1980 1985	1990 1995	MacKenzie Scott	\$36.0	\$65.7	\$29.7	82.6%	N/A	N/A	N/A	Amazon
	1000	1000	Michael Bloomberg	\$48.0	\$54.9	\$6.9	14.4%	\$55.5	-\$0.6	-1.1%	Bloomberg LP
Sou	rce: World Inequality Lab	, World Inequality Repo	Daniel Gilbert	\$6.5	\$49.2	\$42.7	656.4%	\$6.7	\$42.5	633.8%	Quicken Loans
			SUBTOTAL	\$823.1	\$1,262.4	\$439.3	53.4%	\$794.4	\$468.0	58.9%	
			ALL OTHERS	\$2,124.4	\$2,615.9	\$491.5	23.1%	\$2,316.6	\$299.3	12.92%	
			TOTAL	\$2,947.5	\$3,878.2	\$930.7	31.6%	\$3,111.0	\$767.2	24.7%	
So	Source: https://inequality.org Sources: All data in table is from Forbes and available here. March 18, 2020 data: Forbes, "Forbes Publishes 34th Annual List Of Global Billionaires," April 7, 2020										
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More recently, notwithstanding the rhetoric on the bioeconomy, we are unable of take advantage of the raw material available

«Overall, between 2017 and 2019, it has been estimated that over **270 million m3** of standing timber in Central Europe has been damaged by a combination of factors, primarily driven by changing climate conditions featuring hotter, drier summers and warmer winters»

 \rightarrow EU: 2nd exporter of roundwood to China!

(Source: Forest Economic Advisors Report "Central Europe Beetle & Windstorm Timber Disaster: Outlook to 2030»

TESAF Development for horses

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Practically, very limited development (in Italy)

Bio-economy sector	Companies
Bio-textile	Large no. of companies, but not processing raw material
Bio-plastic	Strong presence of ENI group (Marghera, Gela), but based on agricultural biomass
Bio- pharmaceutic/ bio-cosmethics	A leading European position (Aboca, Agripharma, Gentium, Eugeo, Polaris Farmaceutici,) but already acquired before the new bioeconomy narrative. The same for bio-cosmethics
Bio-chimicals	Gruppo Silvateam (tannino)
Plastic-Wood Composite	Novowood, plasticWOOD.it, Inocram, Megawood
Bio-fuel	Bioraffineria di Crescentino (Vercelli)
Bio-energy (power)	A quite large group of companies, based on strong public incentives

Plants for wood bion	power g nass (ke	jene ep	erati con	on based on fidential)
Company	Wood chips annual consumption (tons)	MWe	Region	
Biolevano	190.000	21	Lomb	
Biomasse Crotone SpA 2 e 3	300.000	31	Cal	
Biomasse Italia SpA 2 e 3	450.000	51	Cal	
Biomasse Olevano Srl	230.000	18	Lomb	
Bonollo Energia SPA	75.000	12,6	Lazio	Estimated wood chips
CEB SRL- Compagnia Energetica Bellunese, Longarone	60.000	6	Ven	consumption:
Ecosesto	136.000	15	Cal	3 08 M ton/year
Fusine Energia Srl 2 e 7	80.000	6,5	Lomb	5.00 m ton/ycar
ITAL GREEN ENRGY srl	100.000	12	Puglia	(6.17 M m ³ /year)
Mercure	400.000	35	Cal	(, ,
San Marco Bioenergie	250.000	41	ER	
Sardinia Bio Energy srl	80.000	13,5	Sardegna	
Serravalle Energy S.R.L., Cutro4	200.000	16,5	Cal	
SICET SRL	220.000	21	Ven	
SMB Finale Emilia	80.000	15	ER	
SPER Spa	170.000	18,7	Sic	
TRIERA POWER SRL	50.000	5	Ven	
Zignago Power S.r.l. (sede di Bagnolo di Po)	45.000	4	Ven	
Zignago Power S.r.l. (sede di Fossalta di Portogruaro)	155.000	17	Ven	
				TESAF Development fortigina Constant













- agriculture over the next decade. A [']farm to fork' initiative aims to reduce fertilizer use in Europe by 20% and pesticides by 50%, with one-quarter of land to be farmed organically by 2030. The EU plans to plant 3 billion trees, restore 25,000 kilometres of rivers and reverse the decline of pollinators.
- No parallel targets have been set for external trade

TESAF Operational Ages Formation

Source: Fuchs et al. 2020

















CONTRACTOR NOT CONTRACTOR	Contents insts available at Screense ScienceDirect	2	
and the second	Ecosystem Services	SERVICES	
E. S.L.	Leosystem Services		
ELSEVIER	journal homepage: www.elsevier.com/locate/ecoser		
Rudolf de Groot ^{a,*} , L Leon Braat ^e , Mike Ch Pushpam Kumar ^k , Al Pieter van Beukering *Environmental Systems Analysis G	uke Brander ^{11,1} , Sander van der Ploeg ⁴ , Robert Costanza ^c , rristie ¹ , Neville Crossman ^{8,h} , Andrea Ghermandi ¹ , Lars Hei listair McVittie ¹ , Rosimeiry Portela ¹ , Luis C. Rodriguez ^{8,h} , I b	Florence Bernard ^a , nª, Salman Hussain ^j , Patrick ten Brink ^m ,	
⁴ Environmental Systems Analysis G ^b Institute for Environmental Studies ^c Institute for Sustainable Solutions	youg, Wageningen University, P.O. Box 47, 6700 AA Wageningen, The Netherlands (IVM), VU University, Boelelaan 1087, 1081 HV Amsterdam, The Netherlands (ISS). Portland State University. Portland, 08 97201. USA		
⁴ ASB Partnership for the Tropical F * Alterna, Wageningen University & School of Management and Busine & CSIRO Ecosystem Sciences, PMB 2, & CSIRO Ecosystem Sciences, Bellend * Department of Natural Resources 1	renet Marginu, Werld Agroforestry Centre (ICAW), United Nationa Avenue, Capit, J.D. Box 30677, Na Research Centre, Drovensdatasterzeg 3-3. A 5708 JP Wageningen, The Netherhands u, Aberystruyth University, Cenhryn Bukling, Aberystnych 5723 30D, UK Gen Otsnord, South Assozlai 5964, Australia 16 Ebritostenet Scott, Canberra, ALT 2601, Australia in Brivensenteria Management, Candatas School of Management, University of Halfa, Meuar Carns	rabi 00100, Kenya I, Haifa 31905, Israel	
⁴ ASR Perturning for the Tropical F Alterns, Wagningen University & School of Management and Based Cospitent Sciences, PMB 2. ⁴ CSBO Cospitent Sciences, PMB 2. ⁴ CSBO Cospitent Sciences, PMB 2. ⁴ Departure Economics and Biodivers ¹ Division of Environmental Policy In ⁴ Concernation Literational, 2011 C ⁴ Departure Economics and Biodivers ¹ Division of Environmental Policy In ⁴ Division of Envi	renel Margins, Wireld Agreforenzity Centre (ICAW), United Nationa Avernae, Cajel, P.D. Box 20677, Na Research Centre, Drovensdaulsetterg 2: 3 A. 6708 JB Wageningen, The Netherheinds ist, Aberystruyth University, Clehryn Bukking, Aberystroyth 5723 JDD, UK Gene Osnord, Scatt Maszulai 5644, Australia m Street, Crone, Camberna, ACT 2601, Australia d Eurivensmettal Wanggrunnel, Crandiane School of Menagement, University of Haifa, Meuart Camso y Team, Scottish Agricultural College, King's Buklings, West Mates Road, Edwahegh EB9 305, UK spherentanio (CPUP), United Networks Devisionsener Rengements (DNP), P.D. Bus 20522, Nairobi 600 yraid Drive, Salar 200, Arlington, NA 22202, USA	nabi 00100, Kenya I, Hugʻa 31905, Ionael 060, Kenya	



A simplified view of forest-based ES economy **Ecosystem** Institutions, **Prevailing instruments** Services drivers Provisioning • prices under market economy Market · compensations, incentives, quasi- State • Regulating PES (\leftarrow regulations) Socio-Cultural • Community • tax reliefs, technical assistance, • entrepreneurial support, local authorities' animation TESAF Departments for there is a state of the state of th

A simplified view of forest-based ES economy Ecosystem Institutions, **Economic theory Services** drivers neoclassical economics • Provisioning Market · environmental economics; • Regulating State neo-institutional economics Socio-Cultural • Community social economics Social economics (economia civile) is a branch of economics and a social science that focuses on the relationship between social behaviour and economics. covering such issues as social capital, gender, ethics, and philanthropic behaviour. TESAF Deuteren herters + Saters Ages Forenal

Image: Second	The knowledge of local communities as a tool for protecting biodiversity
(IPBES)	TESAF Development Northerin = Salaren Agos Freedal







- · A gender revolution in the forestry sector
- A change in funding: involving the forest sector in the health care and educational systems means increasing in a remarkable way the investments of the public and private sector
- A cultural change: in the Covid-19 area, how we measure human progress, how we improve quality of life, towards a less consumptive model? → re-thinking the contents of a bio-economy policy? (more forest based socio-cultural services and less bio-raffineries?)

"In the midst of every crisis, lies great opportunity" Albert Einstein

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