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EUROPEAN WORKSHOP ON BIOECONOMY

JUNE 28/29TH 2017, PARIS

Increasing license to operate
in forestry and overcoming
conflicts of representation
with new narrative options

Jean-François Dhôte, Alice Roux (INRA)
Brigitte Musch (ONF) / 29th June, 2017



Why investigating narrative options to speak about the climate challenges of forestry ?

- ❖ Background :
 - ❖ **forests** : you cannot handle separately adaptation to climate change, mitigating it through supply to the bioeconomy and securing the provision of ecosystem services
 - ❖ rational point of view : efficiency, flexibility, diversity enhancement, resilience of ecosystems and management systems...
 - ❖ popular representations of forest disturbances by management as harmful to landscape persistence, Nature, authenticity...
 - ❖ good image of wood VS bad perception of forest management (*« vous ne pouvez pas être pour le saucisson et contre tuer le cochon »*, proverbe breton)
- ❖ Examine ways to overcome/solve :
 - ❖ Growing **conflicts on solutions and representations**
 - ❖ **Low license to operate** (harvesting, planting, changing things in forests)
 - ❖ **Sustainability standards (eg FSC, PEFC) increasingly inadequate** (forbidding practices that would be the most appropriate for CC-adaptation and supply to the bioeconomy)

1

Rationalizations of bioeconomy



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Many resources are forecasted to run out within a relatively short period, ...



Remaining years until depletion of known reserves (based on current rate of extraction)

																		5-50 years																			
																		50-100 years																			
																		100-500 years																			

1	H																	He																	
1.00794																																			
3	Li	4	Be															10																	
6.941		9.012182																20.1797																	
11	Na	12	Mg															18																	
22.98977		24.3050																39.948																	
19	K	20	Ca	21	Sc	22	Ti	23	V	24	Cr	25	Mn	26	Fe	27	Co	28	Ni	29	Cu	30	Zn	31	Ga	32	Ge	33	As	34	Se	35	Br	36	Kr
39.0983	40.078	44.95591	47.867	50.9415	51.9961	54.93804	55.845	58.93320	58.6934	63.546	65.39	69.723	72.61	74.92160	78.96	79.904	83.80																		
37	Rb	38	Sr	39	Y	40	Zr	41	Nb	42	Mo	43	Tc	44	Ru	45	Rh	46	Pd	47	Ag	48	Cd	49	In	50	Sn	51	Sb	52	Te	53	I	54	Xe
85.4678	87.62	88.9085	91.224	92.90638	95.94	(98)	101.07	102.9055	106.42	107.8682	112.411	114.818	118.760	121.760	127.60	126.9044	131.29																		
55	Cs	56	Ba	57	La*	72	Hf	73	Ta	74	W	75	Re	76	Os	77	Ir	78	Pt	79	Au	80	Hg	81	Tl	82	Pb	83	Bi	84	Po	85	At	86	Rn
132.9054	137.327	138.9055	178.49	180.9479	183.84	186.207	190.23	192.217	195.078	196.9665	200.59	204.3833	208.9804	(209)	(210)	(222)																			
87	Fr	88	Ra	89	Ac†	104	Rf	105	Db	106	Sg	107	Bh	108	Hs	109	Mt	110	Ds	111	Rq	112	Uub	113	Uut	114	Uuq	115	Uup	116	Lv	117	Uus	118	Uuo
(223)	226.025	(227)	(257)	(260)	(263)	(262)	(266)	(266)	(271)	(272)	(285)	(284)	(289)	(288)	(292)																				

<http://reports.weforum.org/toward-the-circular-economy-accelerating-the-scale-up-across-global-supply-chains/mounting-pressure-on-resources/>

... while only few materials are recycled at scale

Lanthanides *	58	Ce	59	Pr	60	Nd	61	Pm	62	Sm	63	Eu	64	Gd	65	Tb	66	Dy	67	Ho	68	Er	69	Tm	70	Yb	71	Lu
Actinides †	90	Th	91	Pa	92	U	93	Np	94	Pu	95	Am	96	Cm	97	Bk	98	Cf	99	Es	100	Fm	101	Md	102	No	103	Lr

Current rates of recycling

<1%
1-10%
10-25%
25-50%
>50%
No data available

1	H																	He																	
1.00794																		4.002602																	
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(223)	226.025	(227)	(257)	(260)	(263)	(262)	(266)	(266)	(271)	(272)	(285)	(284)	(289)	(288)	(292)																				

From linear to circular economy: complexity management and modelling
 dominique.luzeaux@polytechnique.org | 5/11/2014
http://www.mosim2014.org/sites/mosim2014.org/files/pdf/Pleniere_D.Luzeaux.pdf

Lanthanides *	58	Ce	59	Pr	60	Nd	61	Pm	62	Sm	63	Eu	64	Gd	65	Tb	66	Dy	67	Ho	68	Er	69	Tm	70	Yb	71	Lu
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Source: Professor James Clark, Green Chemistry, The University of York



Bulletin, décembre 2016

Le low tech, alternative à la fuite en avant technologique

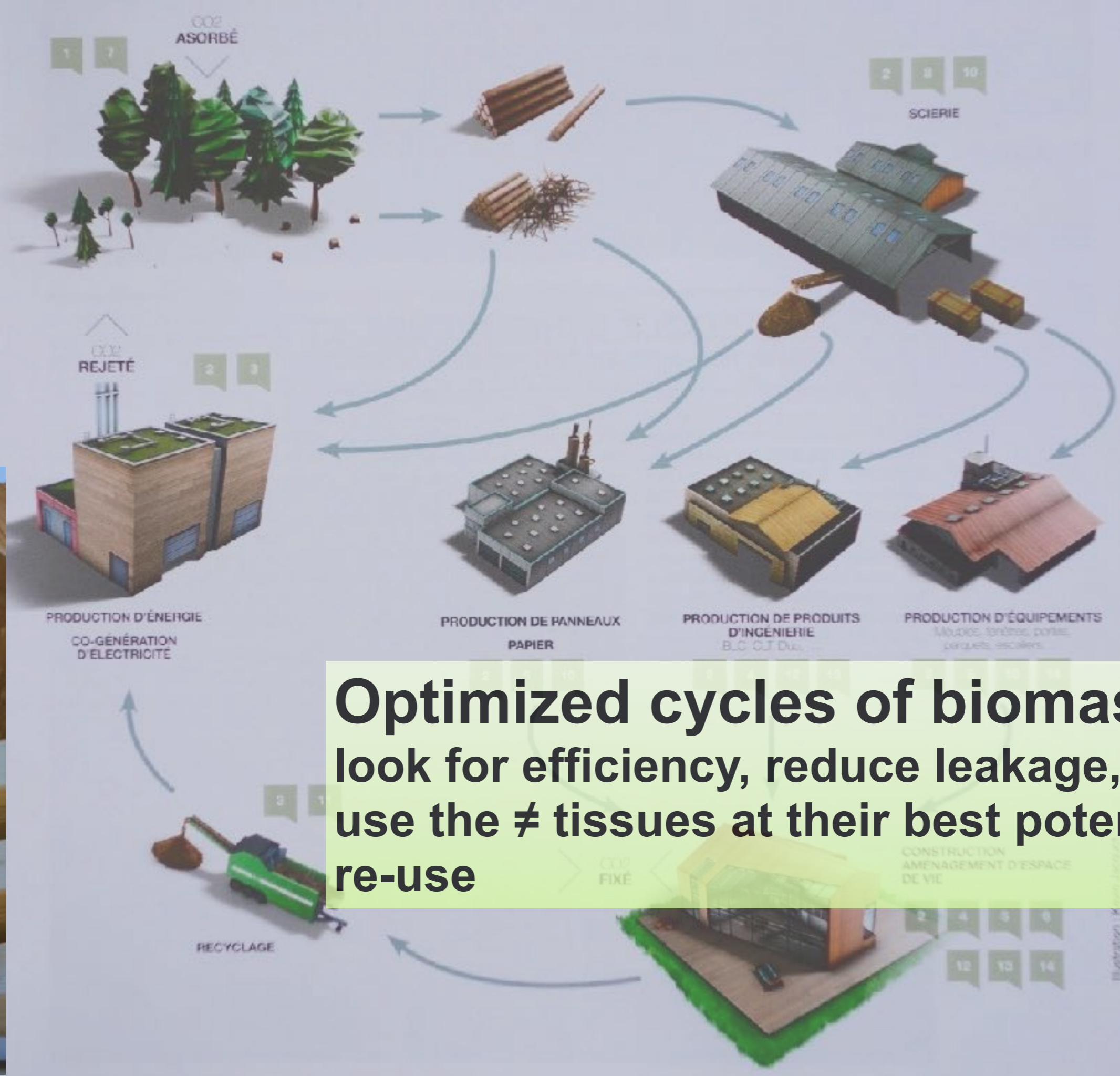
par Philippe Gauthier

Les grandes éoliennes (3-5 MW) peuvent être regardées comme une « fuite en avant technologique »

Le bois peut être regardé comme de l'énergie solaire stockée et flexible

Wood may be viewed as stored, flexible solar energy

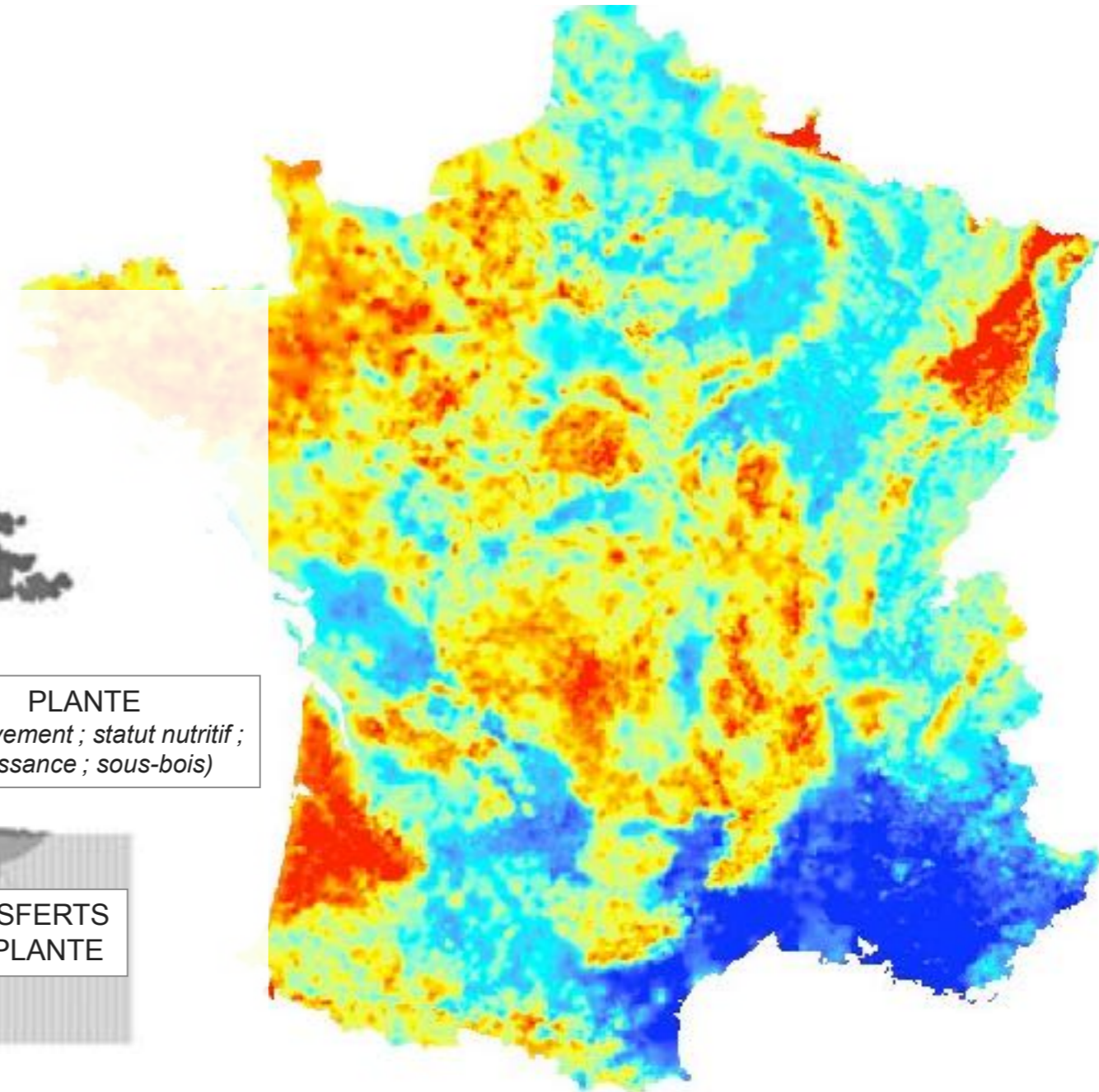
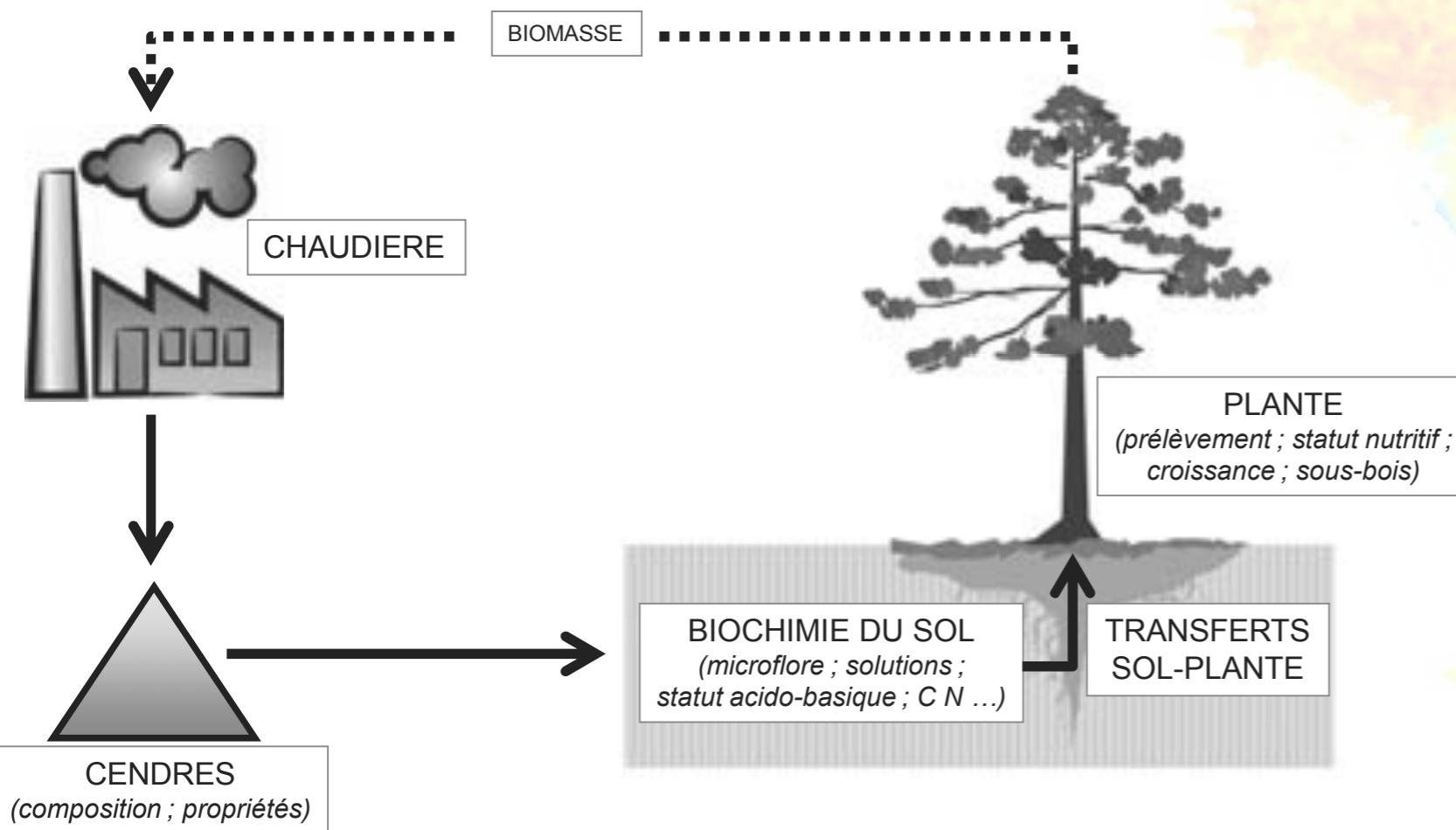




Optimized cycles of biomass :
look for efficiency, reduce leakage,
use the ≠ tissues at their best potential,
re-use

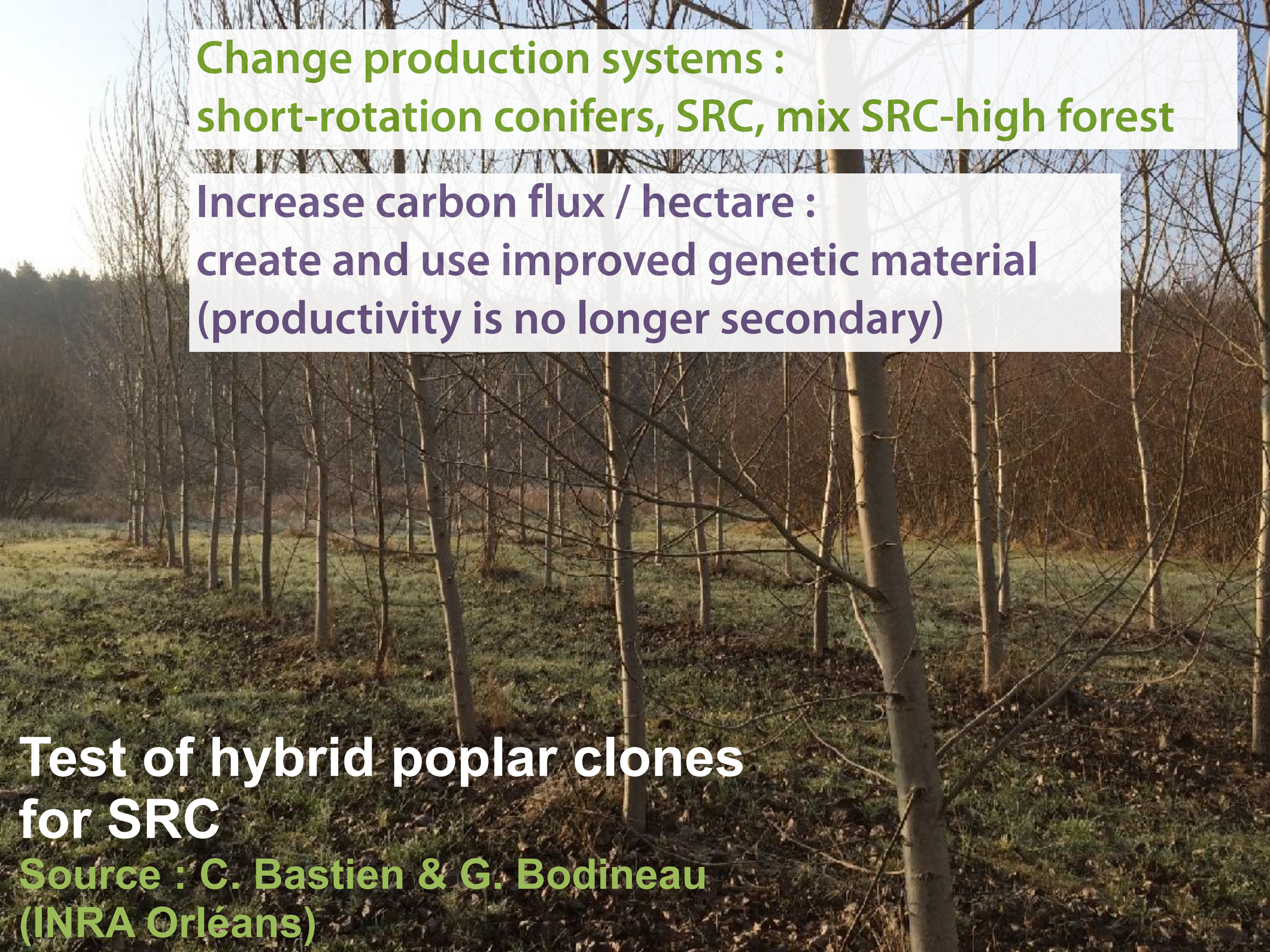
Recycle exported nutrients back to forests, possible strategies : soils/limestone → acid soils

Restitution or recycling of firewood ashes



Carte de France du pH des sols forestiers,
échelle 1km, ©IFN, LERFoB

Source : Augusto et al. (2014) - Les intrants sont-ils nécessaires pour développer durablement la fonction de production ?



**Change production systems :
short-rotation conifers, SRC, mix SRC-high forest**

**Increase carbon flux / hectare :
create and use improved genetic material
(productivity is no longer secondary)**

**Test of hybrid poplar clones
for SRC**

**Source : C. Bastien & G. Bodineau
(INRA Orléans)**

Main lever for increasing supply from private forests : coordinated management by large areas (Cooperatives...)



**Private land 100 ha, 50% grassland, 50% forest, elevation 1000 m
(280 hab. community near Pontarlier, east France)**

Optimal site for Norway Spruce production



Quel rôle pour les forêts et la filière forêt-bois françaises dans l'atténuation du changement climatique ?

COLLOQUE DE RESTITUTION DE L'ÉTUDE INRA-IGN

Mardi 27 juin 2017

FIAP Jean Monnet

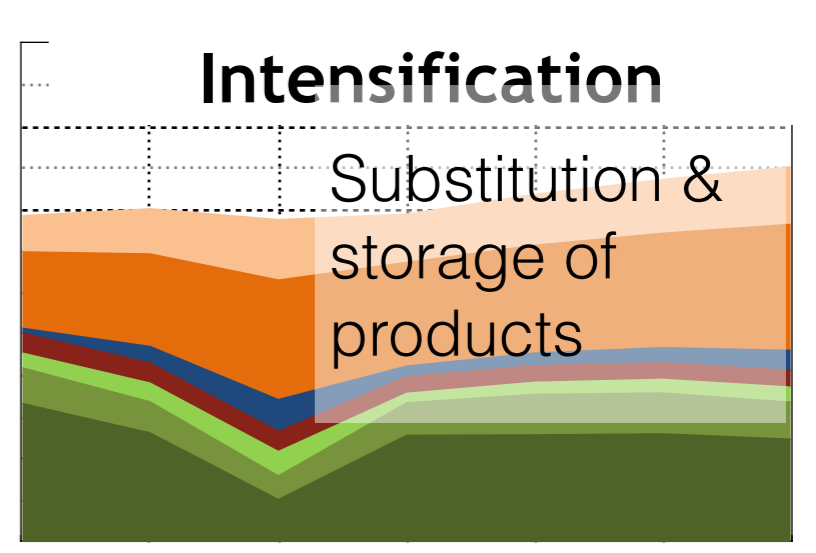
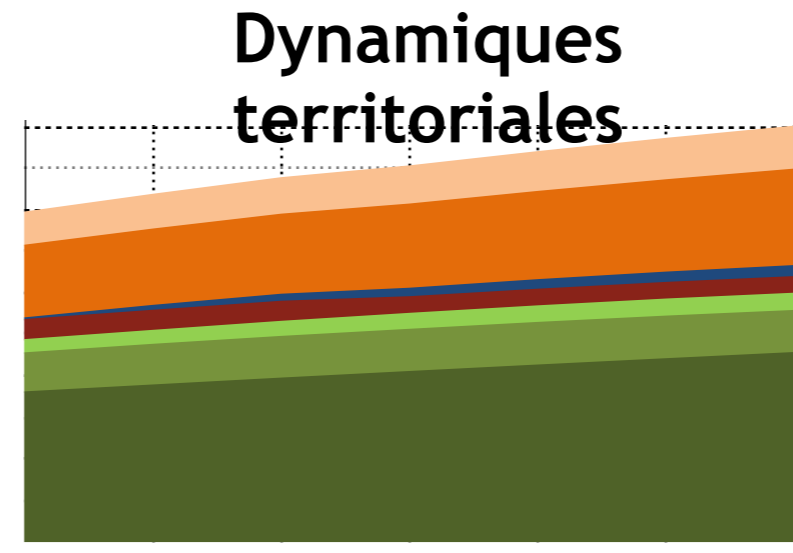
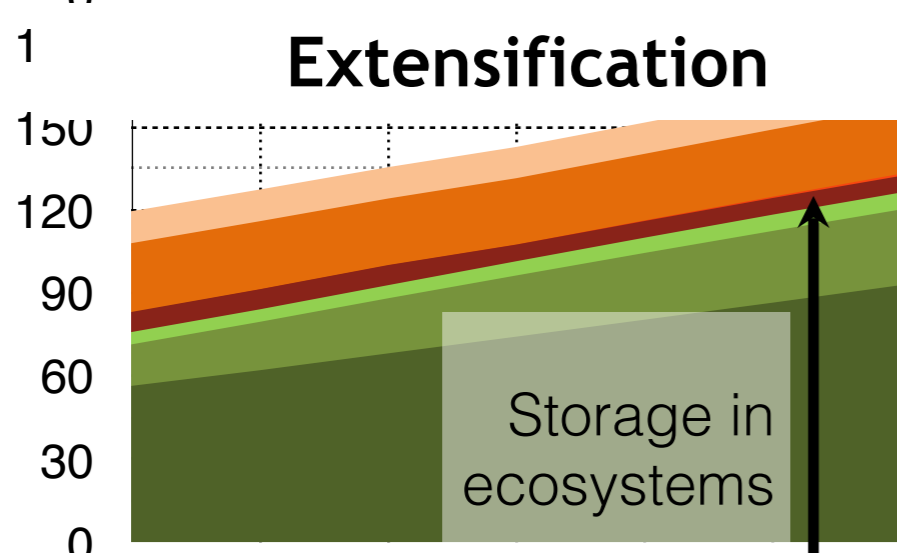
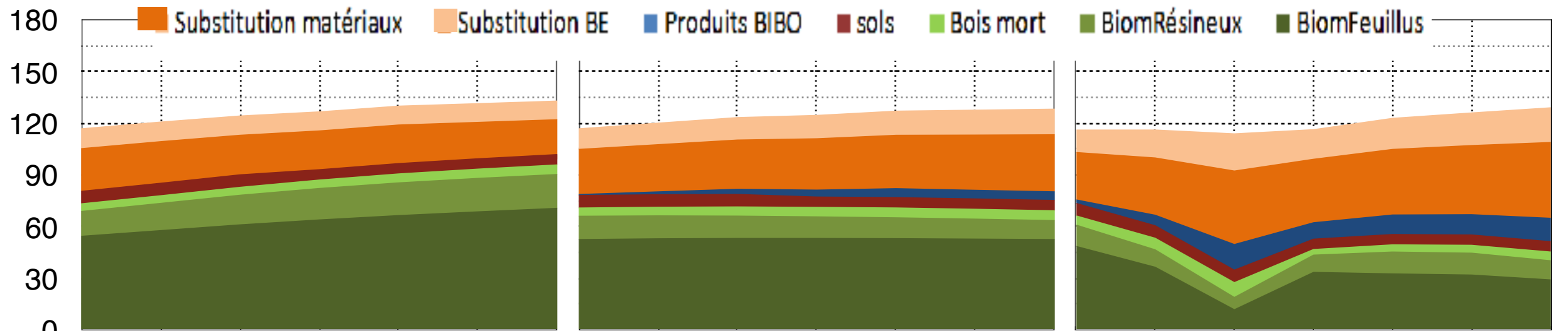
30 rue Cabanis, 75014 Paris

CO₂ budget of the French forest-wood chain until 2050 under 3 scenarios of land use/forest management

Same overall impact across time, until 2050

very ≠ arbitrages between ecosystem storage (labile) and avoided emissions (permanent)

Bilan de CO₂ (M tCO₂eq/yr)



2016-21 2021 2026 2031-35 2036-40 2041-45 2046-50

2

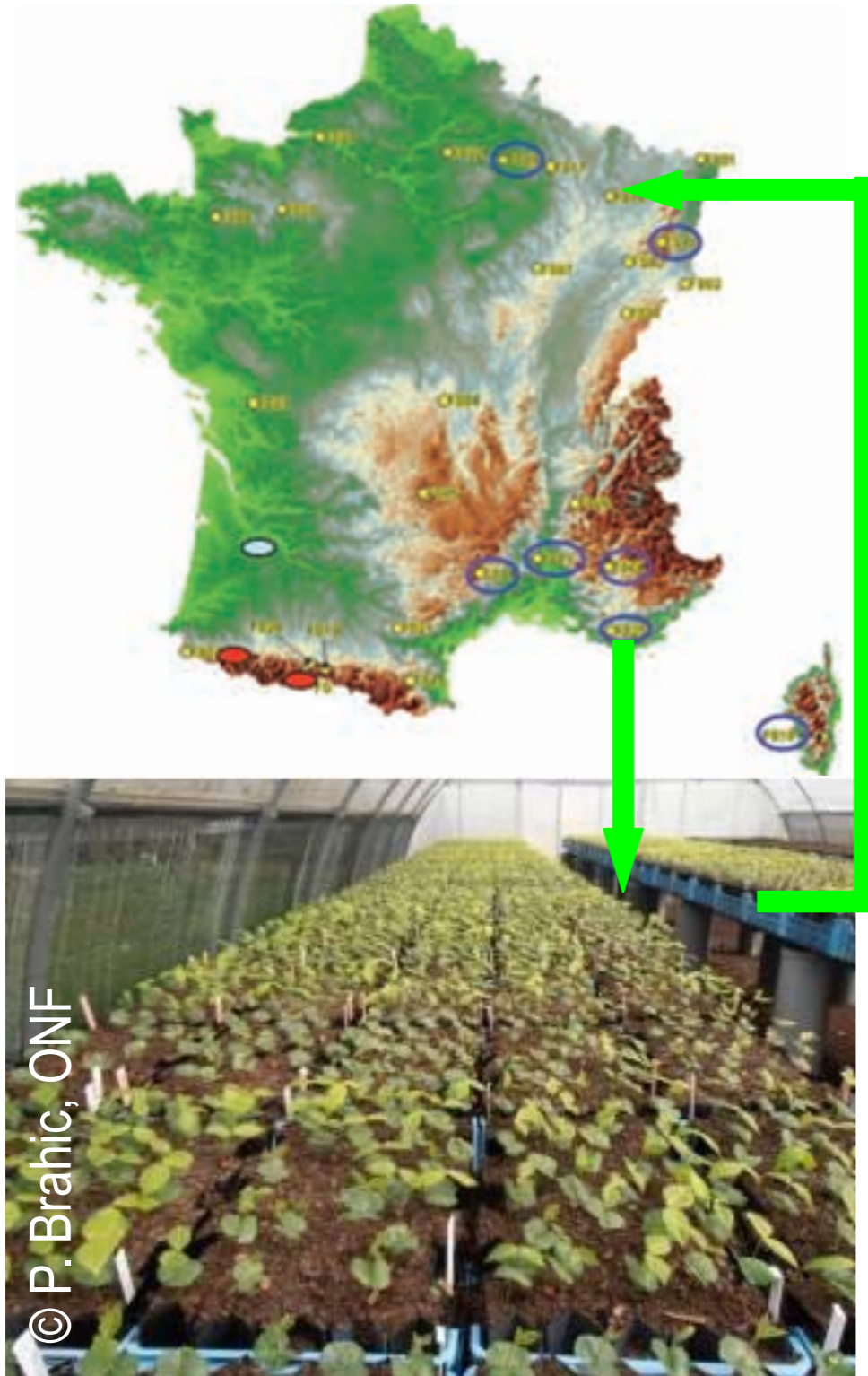
Illustrating some options for adapting forests to climate change



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Change genetic resources : moving populations polewards



Projet GIONO

- **Vulnerability of populations at southernmost margin of distribution areas**
 - monitoring/identification of vulnerabilities
 - safeguarding in nurseries
 - planting on +northern locations
- **Applications :**
 - conservation of genetic resources
 - **strengthen local adaptation of autochthonous species**

Source : Brigitte Musch, Hervé Le Bouler, Olivier Forestier, Patrice Brahic, Myriam Legay (ONF)

**Change genetic resources :
introducing thermophilous species**

**Performance of Eucalypts
under strong drought constraint
(arboretum d'élimination de Caneiret, Estérel)**

Improved, transparent forest management and land-use planning

Poplar (high forest)
SRC Poplar
Mix (HF-SRC)

Fast-growing conifers :
Douglas fir, hybrid larch

Multi-purpose,
« mainstream »
management

National parks,
natural reserves,
recreation areas

Specialization :
products

Land use planning, forest policy : specialize functions in space, e.g.
« Triad » (USA, UK)

Natural regeneration

Very short
cycle

Standard
rotation

Plant other
Oak prov.

Plant other
Oak spec.

Plant exotic
spec.

Example : diversify regeneration options in Oak management

Very short
cycle

Standard
rotation

Delayed
harvesting

Natural
reserve

Example : diversify rotation ages in Beech management

Improve resilience
through :

...genetic res.
mgt

...prevent
abiotic
damages

3

Some narratives that seem to work well, with several ≠ audiences



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MINISTÈRE
DE L'AGRICULTURE,
ET DE L'ALIMENTATION

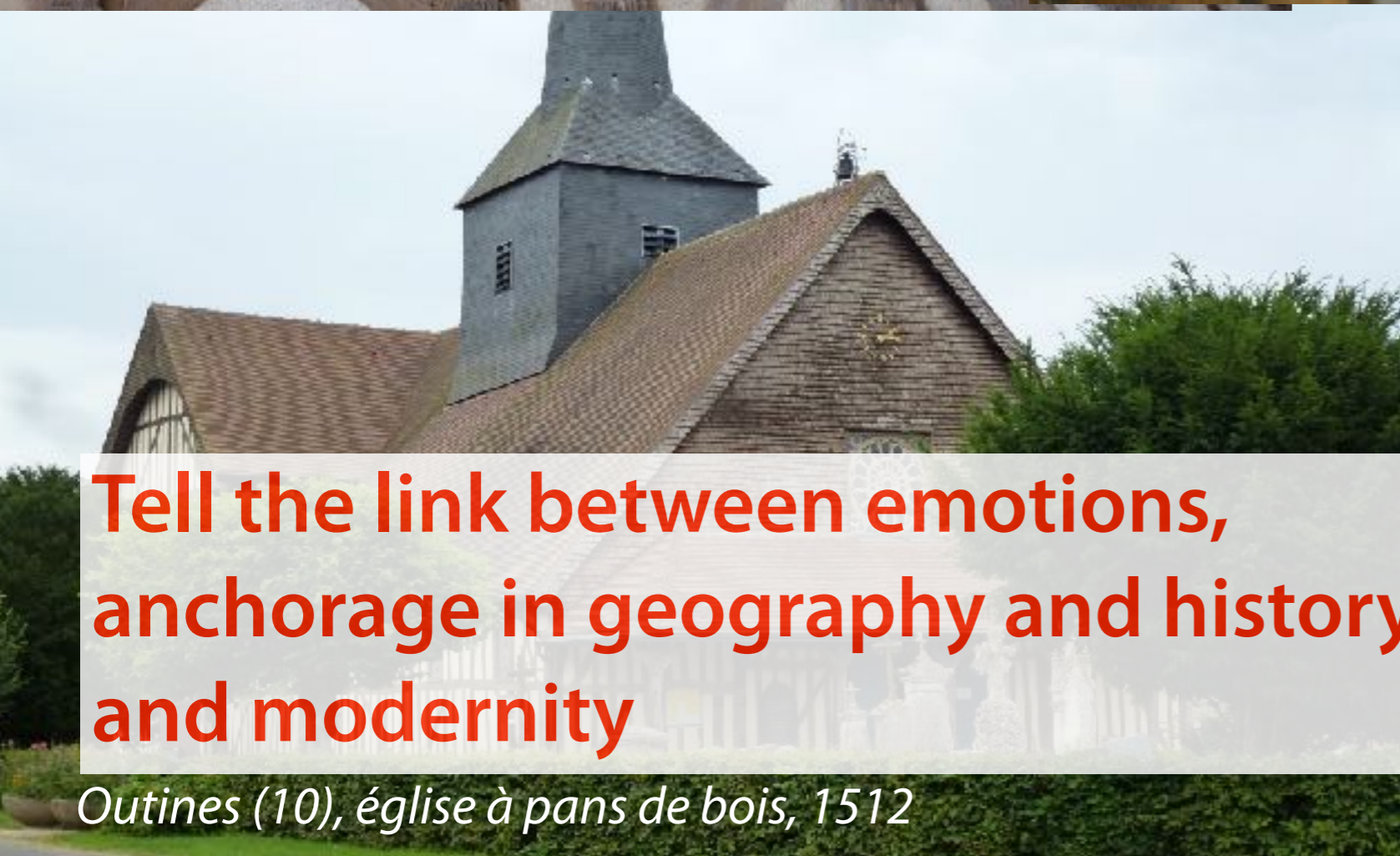




Noyers/Serein (89), habitat 16ème siècle



4 to 5 centuries of C storage & valuing hardwood timber in construction



Tell the link between emotions, anchorage in geography and history and modernity

Outines (10), église à pans de bois, 1512



Lannion (22), Maison du Chapelier, 16ème

Use our forests to create more value, diffuse and stable labour all over the country

Tell the link between emotions, anchorage in geography and history and modernity



Glulam structure :
Simonin Frères
(Montlebon, 25)

Smart business-models can create value from low-quality resources...

**Source : tournée
Directeurs Bois ONF
(20/3/2012)**

Tell stories of personal lives, families and territories (patrimonial look at forestry)

allocate labour where most value is created for the customer

Use pictures of forests with people working in

» FORESTS MATTER BECAUSE «
when managed sustainably
they stabilise our climate
and secure our future

#ForestsMatter
#ForestActionDay #COP22
www.fao.org/forestry/en



Food and Agriculture Organization
of the United Nations



Kai Lintunen @birdieviews · 7 nov. 2016

#ForestsMatter, when managed sustainably they stabilize our climate and secure our future #COP22 #ForestActionDay



**Audience who has proven to be the most resistant
(sometimes angry !) against this narration of forest change :**

- scholars (incl. forest science)
- leaders from larger cities (> 100 000 hab.)
- educated upper-middle class (esp. with a Degree in ecology)
- only French tested...

Merci pour votre attention