

# POLICY BRIEF

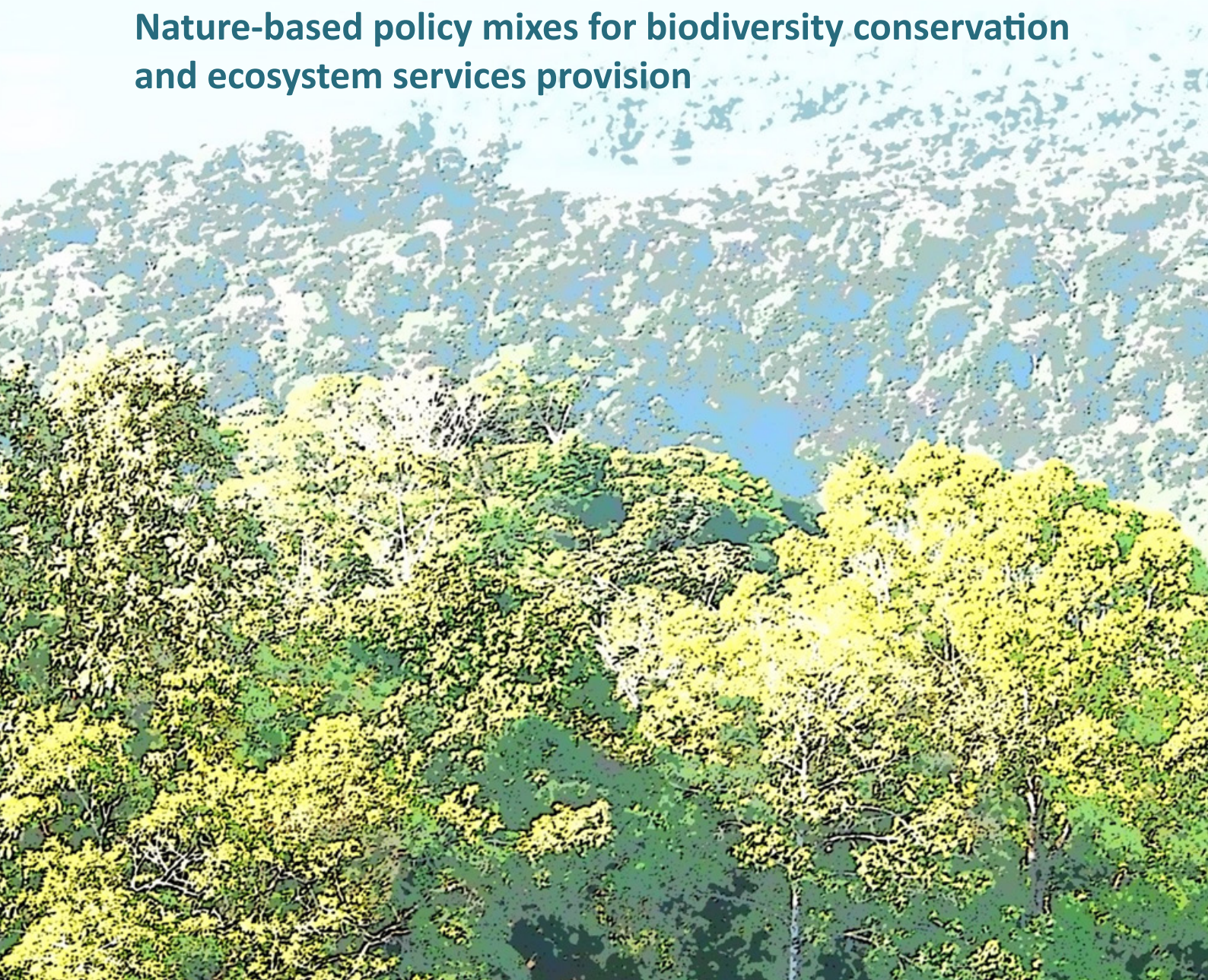
Issue

No. 2

*POLICYMIX - Assessing the role of economic instruments in policy mixes for biodiversity conservation and ecosystem services provision*

## Polycscapes

### Nature-based policy mixes for biodiversity conservation and ecosystem services provision



[policymix.nina.no](http://policymix.nina.no)

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# A nature-based policy mix

Synergies between instruments in relation to policy goals are the exception rather than a rule. Conflicting roles of instruments and the need for trade-off analysis and multiple-criteria design is the normal situation faced by policy in practice.

Recognising that ‘win-win’ solutions in social-ecological systems are rare and less challenging than ‘trade-off’ decisions is a starting point for ‘nature-based’ policy mix design. Policy mix research can also be seen as a search for understanding the characteristics of ‘nature-based’ policyscapes - a policy mix adapted to a diverse social-ecological context, spatially explicit and complementary. A nature-based policyscape achieves biodiversity conservation and ecosystem service provision through policy mix design and targeting attuned to local environmental, social and economic conditions across the landscape. Nature-based policy design should aim for more than maintaining natural capital. Resilient, efficient and locally attuned solutions to societal challenges aim to enhance social capital as a precondition for maintaining and then enhancing natural capital. ‘Nature-based policyscapes’ aim at enhancing local social capital as a means of enhancing natural capital.



# 1 Ecological effectiveness of policy instruments: Gains in biodiversity conservation and ecosystem services provisioning

## OPERATIONALISATION

Historical effectiveness of instrument targeting can be evaluated using before-after-control-impact (BACI) studies. Conservation planning tools (CPT) can be used to evaluate targeting of new policy instruments in different landscapes. The targeting of instruments in CPTs requires specifying policy goals for specific biodiversity conservation and ecosystem service features.

Ecological effectiveness of policy mixes is achieved through a mix of policy instruments that are attuned to the heterogeneity of landscape characteristics. Instruments are selected based on locally occurring features of conservation importance, species representation and ecosystem service provision. At any particular location it is not expected that win-win solutions can be achieved because all conservation features do not occur on all land. But in the wider social-ecological system context, differentiated targeting of policy instruments to different parts of the landscape in a 'policyscape' can simultaneously achieve multiple environmental objectives.

A 'nature-based policyscape' is inspired by nature because it targets instruments to achieve multiple environmental objectives across a diverse landscape, as a pre-condition for providing ecosystem services that achieve social and economic objectives. A 'nature-based policyscape' aims at also achieving environmental objectives in degraded landscapes with potential for biodiversity recovery (enhancing natural capital). Further research is needed on how policyscapes contribute to maintain resilient biodiversity and ecosystem services at landscape level.





## 2 Economic benefits and costs of economic instruments and their implementation

### OPERATIONALISATION

Evaluation of the opportunity costs of forest conservation instruments such as PES and protected areas is an input needed by conservation planning tools for targeting recommendations. Willingness-to-participate can be evaluated using interview and survey techniques. Choice experiments have been used to assess how farmers' decisions on whether to engage in agro-ecological measures or not depend on respondent and landscape characteristics, conservation and ecosystem service features.

Finding locally attuned solutions to societal challenges requires calculating the private and public benefits and costs of landuse change. Information about the public/private net benefits ratios is used to choose the correct incentive for a particular landscape context, combining economic, regulatory and informational instruments.

Societal challenges of landuse management include opportunity costs of conservation. The capacity to differentiate the distribution of costs and benefits of landuse change across landscapes is key to meeting social and economic objectives. Monetary valuation methods are useful in calculating compensation for private benefits foregone due to conservation in the public interest.

Monetary assessment of the value of ecosystem services in systematic economic and environmental accounts provide one of several social-ecological system level indicators of the state of natural capital over time.

A 'value-based policy mix' is inspired by nature because it targets instruments to promote landuse changes that provide private net benefits locally, and public net benefits across the landscape. A 'nature-based policy mix' aims at achieving ecosystem services also in degraded landscapes with potential for ecosystem 're-servicing' (enhancing natural capital).





*'Inspired by nature, using nature and supported by nature',  
but still not good for nature.*

**Illustration: Javier Sáez. Copyright: POLICYMIX - NINA**

# 3 Social impacts of instruments and enhancing policy legitimacy

## OPERATIONALISATION

Conservation cost-effectiveness depends on perceived fairness, legitimacy and 'sense of justice' of participating landowners. Policy planners should have knowledge about how perceptions of the fairness of compensation vary locally across landowners. PES participation depends on many other things than the size of the financial payment – eligibility is often hampered by cadastral inconsistencies and a governance history of overlapping and conflicting institutional objectives.

A 'nature-based' perspective is also a 'society-based' perspective when policy design recognises that human beings have shaped the landscape. Policy must recognise this social-ecological heritage and the resulting path-dependence of policy. Achieving biodiversity conservation and ecosystem services provision includes attuning policy mixes to societal challenges which are local and place-specific.

Knowledge of opportunity costs of conservation must be complemented by knowledge of local interpretations of fairness and legitimacy of economic incentives for land use change and monetary compensation for foregone opportunities. A societal challenge is designing and implementing policies that are legitimate, fair and appeal to local 'sense of justice'.

Locally attuned policy mixes aim at enhancing local social capital as a means of maintaining and then enhancing natural capital. Information and capacity-building are key instruments in 'nature-based policy-scapes' because enhancing local social capitals is a means of enhancing natural capital. 'Legitimate and fair policy mixes' take a social-ecological systems perspective, by targeting policy instruments across the landscape so as to strengthen local community capitals.

While decision-support tools such as multi-criteria or benefit-cost analysis can provide useful perspectives, social research has found that legitimate and fair policyscapes evolve through agreement, rather than aggregation.





*Landscape mosaics have many different user interests requiring a spatially explicit combination of policy instruments in a 'policyscape'*  
*Illustration: Javier Sáez. Copyright: POLICYMIX - NINA*

# 4 Institutional and legal options and constraints

## OPERATIONALISATION

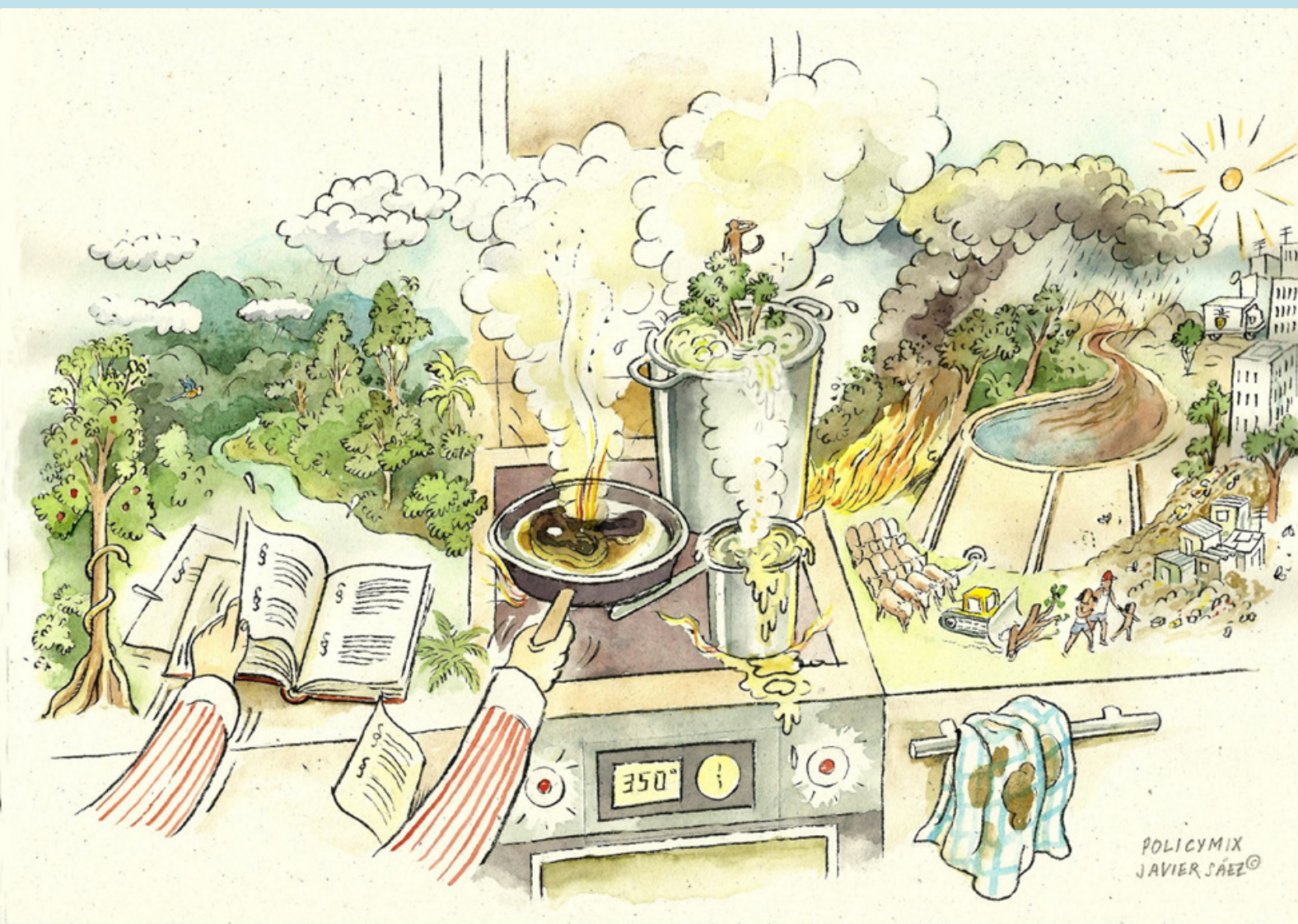
Understand how the current policy mix has evolved to fit the mosaic of landscape interests at different stages of the landscape transition.

Incentives for voluntary conservation are a necessary, but not sufficient part of policy mixes for biodiversity conservation and ecosystem services provision. Incentives for landuse management should include economic instruments where they can complement or act in synergy with institutions that are already in place.

A ‘nature-based policy development’ takes a systems perspective because it recognises that an institutional history has shaped and been shaped by a changing landscape and its landusers. ‘Nature-based policy development’ targets (economic) instruments with the aim of complementing and acting in synergy with regulatory and information instruments that are already in place.

A ‘nature-based policy design’ is inspired by nature by recognising that sustainable policy instruments must evolve and adapt to the mosaic of landuse interests which are grounded in the landscape. ‘Nature-based policyscapes’ recognise that local norms vary with landusers, their dependence on land and its varying characteristics across the landscape. ‘Nature-based policy mixes’ evolve through experimentation over many policy cycles in order to adapt to and be adopted by existing institutions.





***A policy mess on the forest frontier.  
What is the nature-based policy solution?  
Illustration: Javier Sáez. Copyright: POLICYMIX - NINA***

# 5

## Transferability of lessons on policy mixes for biodiversity conservation and ecosystem service provision

### OPERATIONALISATION

Before transferring PES success stories policy-makers must take into account differences in landuse change history. Little evidence-based research on transferability of effectiveness, costs and legitimacy exists beyond a handful of countries. Given the scarcity of real-world policy experiments, there is a great role for local level pilot projects, as well as virtual experimentation. Agent-based models can be used to demonstrate the path dependence of policyscapes under different assumptions about the PES and landscape characteristics.

Correlations between biodiversity and different ecosystem services change across social-ecological systems and their landscapes. Recognising that ‘nature-based policyscapes’ are attuned to the mosaic of landuse interests and landscape characteristics, also recognises that the performance of economic instruments cannot be extrapolated beyond the policy mix within which it has evolved.

Policy mix analysis recognises that institutional jurisdictions exist at varying spatial scales, are spatially overlapping and nested within each other. It recognises that this is a policy response to externalities which are caused by the correlations between biodiversity and ecosystem services occurring at different spatial scales. Therefore, nature-based policy mix (solutions) analysis is a multi-scale approach.

The interactions and functional roles of economic instruments change across contexts. Multi-scale policy mix analysis teaches us caution against the transfer of policy efficiency and legitimacy findings between contexts.





*Are the stakeholders ready for the policy mix recipe?  
Nature-based policy mixes must be adapted to users'  
situation, as well as landscape characteristics.  
Illustration: Javier Sáez. Copyright: POLICYMIX - NINA*

# 6 Nature-based win-win solutions without ecosystem services?

## OPERATIONALISATION

Nature-based policy solutions require the analysis of policy instrument interactions across multiple spatial scales.

Discussions about the definition of nature based solutions have raised the following questions. Are “nature-based solutions” to policy: ‘win-win sustainability measures meeting simultaneously environmental, social and economic objectives’? Are nature-based solutions ‘inspired by nature, use nature or are supported by nature’? Are nature-based solutions ‘resilient, efficient and locally attuned solutions to societal challenges, that take into account the wider system context while maintaining our natural capital’?

A ‘win-win’ framing of the societal policy challenge of biodiversity conservation and ecosystem services provision can be mistaken for assuming that there are no hard trade-offs between the three environmental, social and economic objectives of sustainable development. There is nothing inherently ‘nature-based’ about social and economic objectives in themselves, unless ‘sustainability measures’ have nature-based designs.

Solutions that ‘use nature’ or are ‘supported by nature’ include all manufactured goods and most services. A policy that is ‘inspired by nature’ excludes very little and is therefore not operational for priority-setting in policies that aim at trade-off resolution.

The “ecosystem services” concept has been one of the key concepts in EC policy and research initiatives in FP6 and FP7. Not defining the relationship between “ecosystem services” and “nature-based solutions” risks wasting research resources on further rounds of conceptual clarifications after a decade of conceptual clarification work started by The Economic of Ecosystems and Biodiversity (TEEB). Ecosystem services capture the idea of “use of and support by nature”. “Inspired by nature” would also seem to open up to substitution of natural capital and ecosystem services for man-made capital and services. If this is the case, nature-based solutions would be based on a weak rather than a strong definition of sustainability.

The definition of “nature-based solutions” that would seem to come closest of the above is ‘resilient, efficient and locally attuned solutions to societal challenges, that take into account the wider system context while maintaining our natural capital’. This social-ecological systems approach is by definition multi-scale.





# 7 Key research and innovation priorities of nature-based solutions

A research agenda for nature-based solutions should include a focus on recipes for resilient, efficient and locally attuned policy mixes that maintain and enhance social and natural capital.

Nature-based solutions research should address how the policy mix needs to be adapted to both landscape, land-user and decision-making contexts. What are the levels of use that enable maintaining natural capital? How should various levels of use be distributed across a landscape mosaic to achieve overall sustainable levels that maintain and improve natural capital condition?

Nature-based solutions research in land use planning should focus on opportunities, but also on the constraints and trade-offs implicit in policies to conserve and enhance natural capital. A research focus on only 'win-win solutions' will be very narrow, and will not recognise the strong sustainability requirements of non-declining natural capital, with limited possibilities to substitute natural capital for man-made capital. Research on nature-based policyscapes should focus on recipes for resilient, efficient and locally attuned policy instrument mixes that maintain and enhance social and natural capital. “





*Research on ‘policy recipes’ for resilient, efficient and locally attuned policy mixes that maintain and enhance social and natural capital.*  
*Illustration: Javier Sáez. Copyright: POLICYMIX - NINA*

# 8 About POLICYMIX

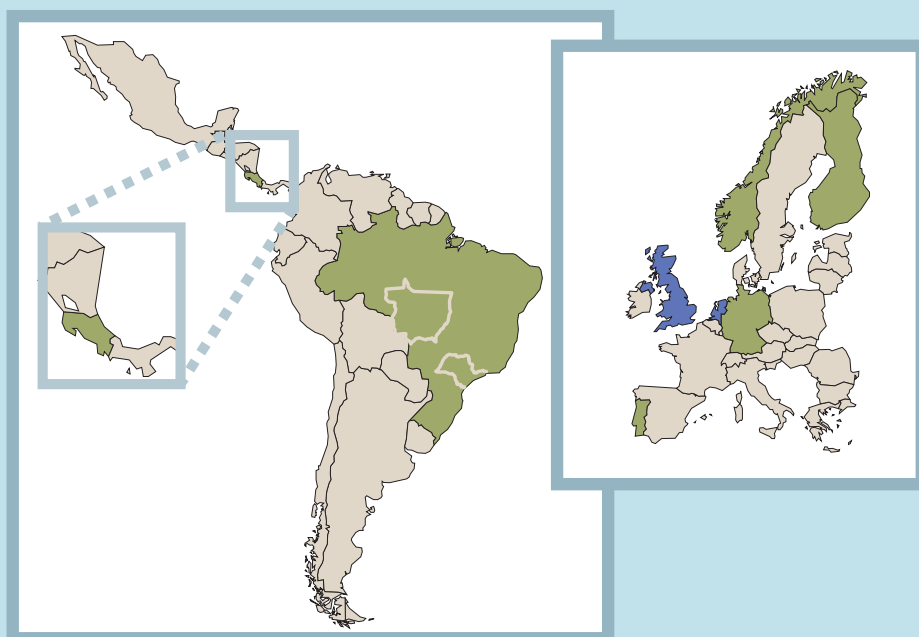
## OPERATIONALISATION

Learn more:  
Download the POLICYMIX  
toolbox (interactive pdf)

Visit the website:  
<http://policymix.nina.no>

The EU FP7 project POLICYMIX (2010-2014) has focused on assessing the role of economic instruments in policy mixes for biodiversity conservation and ecosystem service provision in forests. POLICYMIX has evaluated the implementation processes and outcomes for a selection of economic instruments in seven case studies in Europe and Latin America. In particular, the project evaluates payments for ecosystem services (PES), agro-ecological measures (AEM), tradable development rights (TDR) and ecological fiscal transfers (EFT). The Brazilian and Costa Rican case studies provide important insights into enabling conditions of PES, TDR and EFT, the analysis of which is also relevant for EU Member States.

***POLICYMIX partner  
and case study  
countries***









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