

SIWI REPORT no 36

Water, forests, people – building resilient landscapes

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Summary

The Stockholm International Water Institute (SIWI) Swedish Water House (SWH) Cluster Group for Water and Forests started with a mission to highlight the importance of forests and sustainable forest management to securing water resources globally. We have concluded that establishing resilient landscapes is the most promising way forward and that Sweden's extensive experience and competencies constitute a substantial resource. This means Sweden could make a considerable contribution towards fulfilling the UN Sustainable Development Goals (SDGs). Building resilient landscapes is key to sustainable development and Swedish understanding and knowledge could catalyse positive change in the management of forest landscapes at the global level.

Why water and forests?

Trees and forests moderate water budgets, clean water and reduce both erosion and runoff. They also play a central role in global food security, protection of biodiversity and in economic development. The goods and services they provide have the potential to build resilience among farmers, through diversification of incomes and livelihoods. This supports economic growth, food security and water security in rural areas.

Of the original amount of global forest cover of the world, 15 per cent remains intact, 38 per cent is fragmented, 20 per cent is degraded and 28 per cent is deforested. The negative effect of forest degradation and deforestation on biodiversity and climate change is well recognised in the global sustainability discourse. The negative effect on water resources is not as well understood or given due emphasis, even though trees and forests are central to managing water resources effectively, particularly for countries in seasonally dry regions. Sustainable management of the remaining forest and restoration of degraded forests is essential to secure and sustainable water resources.

The SIWI Swedish Water House Cluster Group

“Water and Forests” | SIWI Swedish Water House took the initiative to bring together Swedish expertise and stakeholders in forest-related water management. The objective was to identify key knowledge and experience on sustainable water resource management in forests, which could be shared with a larger audience both nationally and internationally. The Cluster Group became active in the first half of 2014. Representatives from the Forest, Climate and Livelihoods Network at Chalmers Technical University (Focali), the Swedish Forest Agency (SFA), Swedish University of Agricultural Sciences Global Programme (SLU Global), Svensk SkogsCertifiering AB (SSC Forestry), StoraEnso, Sveaskog, SIWI Climate Change and Water Programme and SIWI Swedish Water House are core members of the group (Box 2).

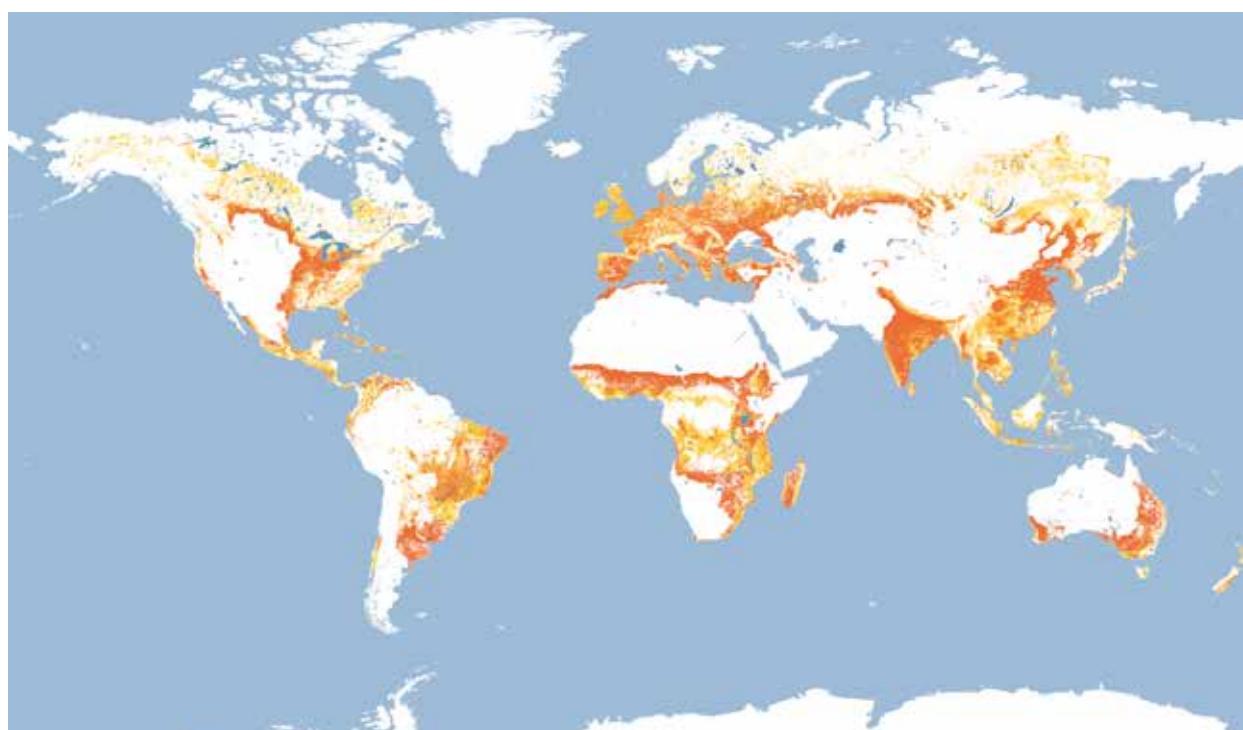


Figure 1. Lands that have been degraded or deforested (World Resources Institute)

A comprehensive resource base of professionals from the Swedish forest and water resource sector was invited to attend a series of seminars and workshops. They analysed and identified the key components for successful management of water resources in relation to forest management in Sweden. Discussions on how to contribute to international development with respect to water and forest management were another important part of the seminars. More than 100 people from 43 academic, public and private sector institutions and non-governmental organisations (NGOs) participated in these seminars and workshops (Box 3). Inputs and recommendations from the seminars form the basis of this report. However the report is the responsibility of the members of the Cluster Group alone.

The seminar presentations and discussions underlined that the needs of increasing populations globally, coupled with climate change, will put water resources under large and growing pressures. Trees and forests will play an increasingly important role, regulating the hydrological cycle in different landscapes and climates. Different management strategies can be combined, to maintain and improve water regulation alongside increased food production and sustainable livelihoods, for communities, sharing the same resources and landscapes. These strategies include forest conservation, forest landscape restoration, agroforestry and sustainable forest management. Land users have a key role to play and need to be in the driver's seat for positive change to happen. They also need to be motivated by a fairer and more sustainable distribution of the values generated by forests and trees.

Integration of water management in the day-to-day management of forests is a fairly new practice in Sweden. However, recent dialogue processes have led to promising initiatives and policies for forest-water management. Sweden is a humid country, rich in water resources, and the biophysical aspects of the relationship between water and forests/trees, is different from seasonally dry regions in the south. Therefore, the value of Sweden's contribution on forest and water management lies not in specific details of forest management but rather in the general formation of societal strategies to restore and/or maintain forests and trees for the benefit of, for example, water regulation and management.

This report highlights the urgent need for global landscape restoration and sustainable forest management. It draws on experiences from the Swedish restoration process. It also underlines the value of enabling conditions and structures afforded by broad societal efforts to address challenges in forest and water landscape based management. Our ambition is that it will:

1. inspire Swedish forest stakeholders to engage increasingly in international forest and water dialogues and processes
2. initiate bilateral and multilateral activities to build resilient landscapes, with resulting benefits for water resources, forests and people

Reports and presentations from seminars and workshops, as well as this synthesis report, are posted at the Cluster Group website: www.swedishwaterhouse.se/en/cluster-groups/water-forests

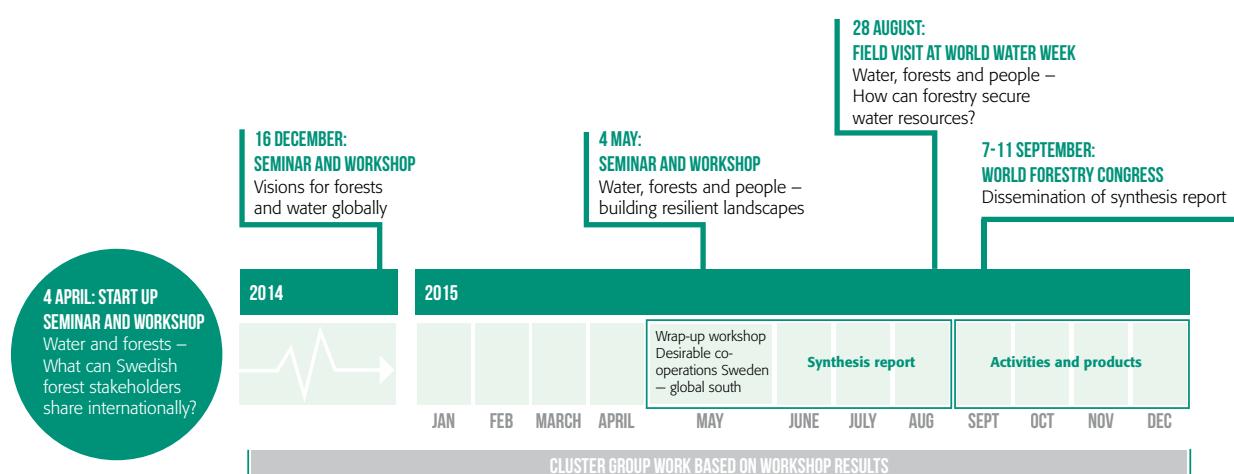
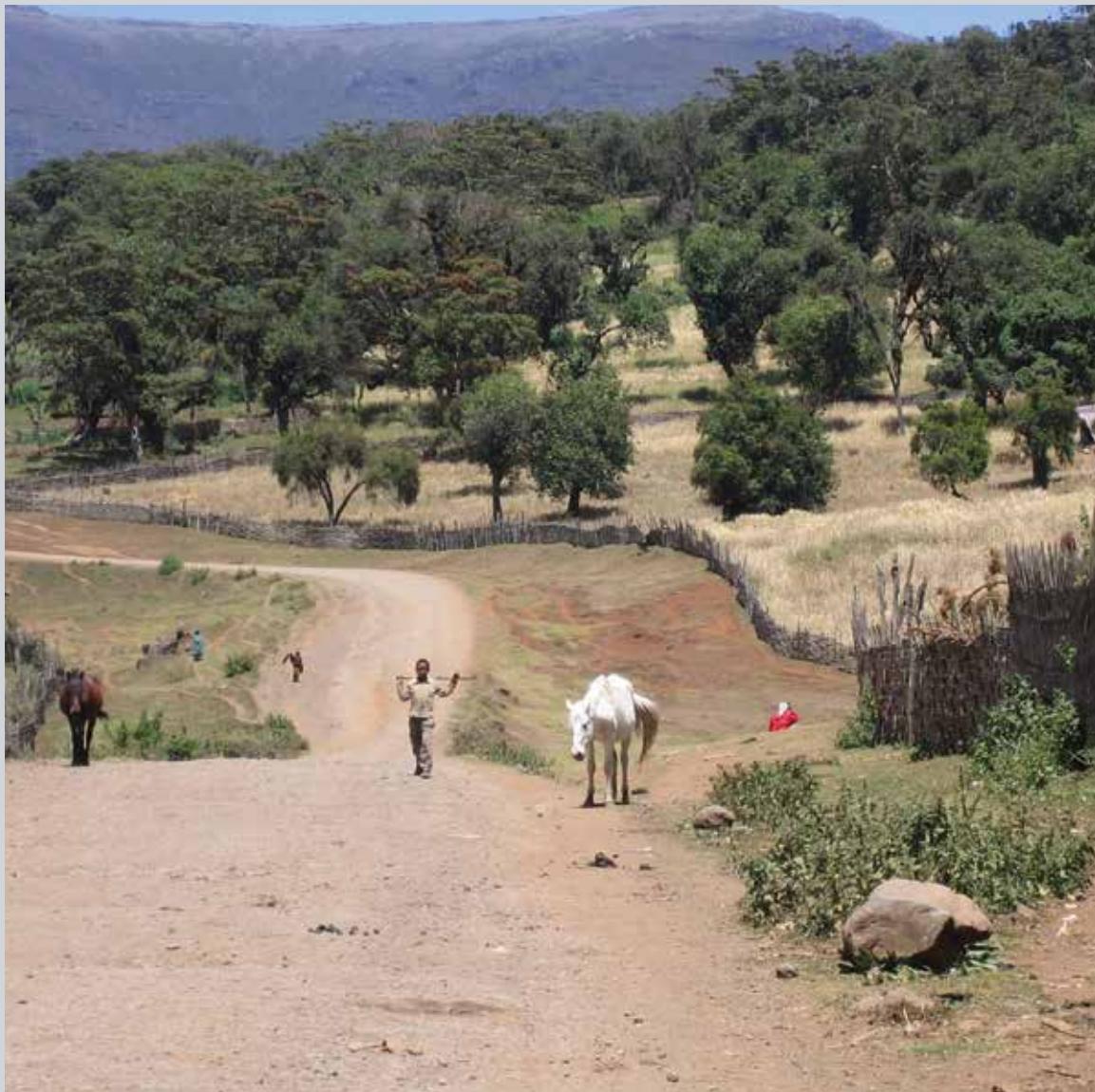


Figure 2. The group operates according to the activity plan above

Box 1. Key concepts used in this report



Photos: Anders Malmér

Forestry is the management of forests. Forests are often defined as having a certain tree density. Food and Agricultural Organization of the United Nations (FAO) definition: > 10 per cent crown cover, > 0.5 hectares, > 5 m high – even including sparse densities, but not small woodlots and lines, clumps and single trees in agricultural landscapes.

Management of trees and forests in landscapes includes management of closed forests as well as trees in agroforestry, smaller woodlots and single trees for various functions e.g. terraces, borders, windbreaks, fruit trees etc. Trees and forests can be managed for:

- industrial value chains, both by industry and by farmers;
- subsistence or local value chains e.g. fruit, nuts, fodder, poles; for other ecosystem services e.g. soil and water conservation;
- cultural and spiritual values e.g. shade, religion etc.

Forest Landscape Restoration (FLR) is restoration of former forest land to closed forests or mosaics of agriculture, forests and trees in a

landscape. It is important to recognise the diversity of situations and objectives FLR needs to cater for. **Forest and Landscape Restoration** is a slightly different term which is recently used by FAO to highlight this complex picture. Both of these terms can include restoring biodiversity value as well as other values. Restoration of productivity and sustainable delivery of services for livelihood development is often central for the landscape dwellers.

Smallholders are forest smallholders and forest communities with traditional land rights, ownership or user rights, and can also simply be local residents of threatened forest landscapes.

The Swedish resource base, as related to forest landscape restoration, includes forest authorities, universities and research institutes, industry, consulting companies, smallholder organisations, civil society, environmental and tree planting NGOs, certification organisations and the Swedish church.

Box 2. Members of the Water and Forest Cluster Group

- Eskil Mattsson, Forest, Climate and Livelihoods Network at Chalmers Technical University (Focali)
- Lotta Samuelson, Programme Manager, Swedish Water House, Stockholm International Water Institute (SIWI)
- Nicolai Schaaf, Programme Officer, Swedish Water House, Stockholm International Water Institute (SIWI)
- Anna Tengberg, Acting Director Climate Change and Water, Stockholm International Water Institute (SIWI)
- Linnea Jägrud, Limnologist, Swedish Forest Agency (SFA)
- Thorsten Celander, International Coordinator, SFA
- Anders Malmer, Head of SLU Global, Swedish University of Agricultural Sciences (SLU)
- Klas Bengtsson, Director, Svensk SkogsCertifiering AB (SSC Forestry AB)
- Ola Svending, Manager Environmental Affairs, StoraEnso AB
- Olof Johansson, Director of Silviculture and Environment, Sveaskog AB

Box 3. Participating institutions in seminars and workshops organised by the Cluster Group

CDP (Carbon Disclosure Project)	Rainforest Alliance
Forest, Climate and Livelihood Research Network at Chalmers University of Technology	Sense Group AB
Centre for International Forestry Research (CIFOR)	Swedish International Development Cooperation Agency (SIDA)
Ekebo Forest Management AB	Secretariat for International Forestry Issues (SIFI)
Food and Agriculture Organization of the United Nations, FAO	Stockholm International Water Institute (SIWI)
Forest Trends	Skogforsk (the Forestry Research Institute of Sweden)
Forest Stewardship Council (FSC) Sweden	Swedish Forest Industries Federation
Gothenburg University	Swedish Forest Agency
Hamra Gård Consultancy	Swedish University of Agricultural Sciences (SLU), Global Programme
IVL Swedish Environmental Research Institute	Swedish Meteorological and Hydrological Institute (SMHI)
KTH Royal Institute of Technology	SSC Forestry
Linköping University	Stockholm Environment Institute (SEI)
LRF Forestry (The Federation of Swedish Family Forest Owners)	Stockholm Resilience Centre (SRC)
Ministry of the Environment and Energy	StoraEnso AB
Swedish Museum of Natural History	Sveaskog AB
Swedish Society for Nature Conservation	Church of Sweden
Swedish Environmental Protection Agency	Södra (Sodra)
NIRAS	TetraPak AB
Nkoola Agencies International Ltd	Vi Agroforestry
Ministry of Enterprise and Innovation	World Resources Institute
Programme for the Endorsement of Forest Certification (PEFC)	World Wide Fund for Nature (WWF) International
	WWF Sweden

Water, forests and people – the global perspective

Anthropogenic pressures on the earth's system have reached a scale where abrupt global environmental change can no longer be excluded. Degradation of forests and loss of forest cover is a major global threat, driven primarily by human pressure caused by agricultural expansion. Forests and trees play a crucial role in the hydrological cycle. They influence the amount of water available and regulate the division between surface and groundwater flows. Forests and trees also have great importance for provision of other ecosystem services for social, economic and ecological resilience. Sustainable management of forests and trees is essential to staying within planetary boundaries and to ensuring a safe operating space for humanity e.g. forests and trees in the landscape act as carbon sinks and can regulate precipitation at the continental scale, through moisture feedback.

Studies and reports from the Stockholm Resilience Centre show that global freshwater use is a critical planetary boundary. Manipulation of the freshwater cycle affects biodiversity, food security and ecological functions e.g. provisioning of habitats, carbon sequestration and climate regulation. Rapid climate change adds to the pressure on ecosystems and risks leading to critical transitions or regime shifts in ecosystem structure and processes.

Landscape approach | The landscape approach as described by the Centre for International Forestry Research (CIFOR), has the potential to address many of the global challenges we currently face. It provides a framework for addressing the increasingly complex and widespread social, environmental and political drivers that typically transcend traditional management boundaries. The landscape approach is multi-sectoral and brings together different actors and stakeholders from industry, local communities and government, to resolve conservation and development trade-offs in the management of natural resources.

Trees and forests in the landscape are central to managing water resources based on their role in infiltration, evapotranspiration, surface runoff and sub-surface flows. In most cases, the presence of forests in the landscape provides both local and regional benefits that far out-

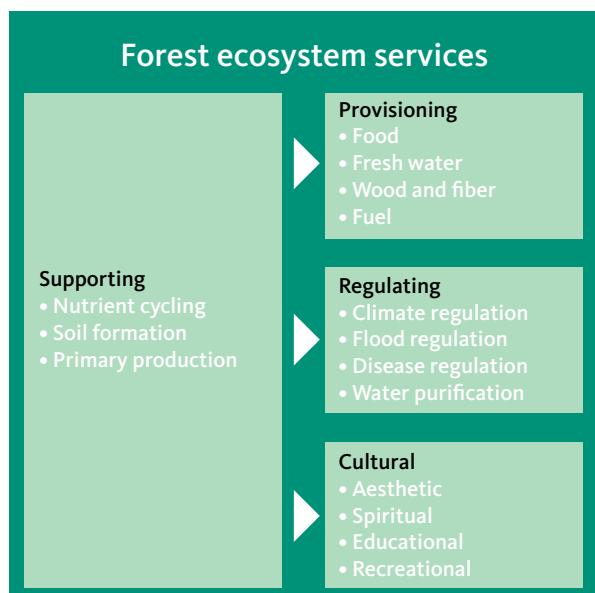


Figure 3. Examples of forest ecosystem services (adapted from the Millennium Ecosystem Assessment)

weigh the costs of the reduction in total water flow in rivers. There are some exceptions where forest plantations have been problematic, notably in semi-arid grasslands that do not support forests naturally. Better empirical knowledge on ecosystem services would allow determination of optimal tree densities and optimal forest locations in different landscapes. Lessons can be learned from previous experience, such as watershed management programmes, to further refine strategies for creating more resilient landscapes.

So far, there are no formalised global agreements related to forests, water and landscape rehabilitation, although there are recent initiatives to address these challenges. The Forests and Landscape Restoration Mechanism that was launched in 2014 is linked to the Bonn challenge, with the objective to restore 150 million hectares of the world's deforested and degraded lands. In the New York Declaration of Forests, signed in 2014, governments, multilateral companies, civil society and environmental NGOs pledged to halt global deforestation and to restore 350 million hectares of degraded lands by 2030.

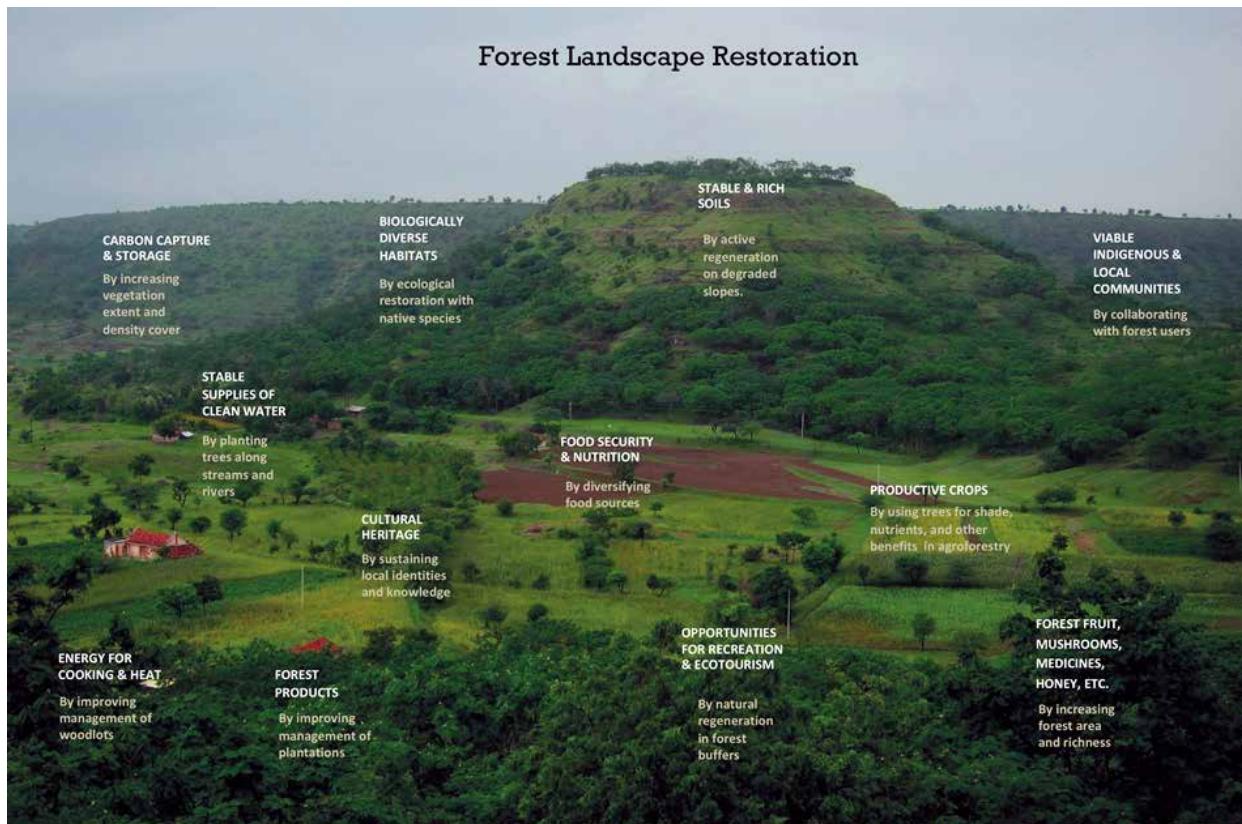


Photo: World Resources Institute

Figure 4. Restoring degraded forest landscape, using a landscape approach

In addition, a Forest and Water Action Plan is under development, coordinated by FAO. This will be launched at the XIV World Forestry Congress in Durban in 2015.

Forest landscape restoration and mosaic landscapes | Despite the threats facing forests and rural communities, the World Resources Institute has shown that there are significant opportunities for restoring degraded forest landscapes. Around two billion hectares of land have the potential to be restored to some form of wooded landscapes. These landscapes could enhance water resources, biodiversity, carbon sequestration, and provide opportunities for improved and diversified livelihoods both locally and globally. However, forest landscape restoration cannot compensate for on-going deforestation and this needs to be addressed in parallel. Partnerships across sectors, themes and landscapes are essential to catalyse restoration of forest landscapes at a sufficient scale.

Generation of multiple benefits | Forest landscape restoration mitigates climate change and addresses issues related to biodiversity and the three global challenges for water i.e. too little, too much and too dirty. It could also be instrumental in significantly reducing poverty in rural areas, provided there are clear incentives for the rural poor to manage land sustainably. Moreover, sustainable management of forests and restoration of degraded forest lands have the potential to provide incomes from

a variety of forest and tree-products all over the world. Income from timber, fibres and bioenergy will be the most crucial, also in developing countries. In more densely populated areas agroforestry and wood lots can produce other non-timber forest products (NTFPs) such as fruit, fodder and fuel. In less populated areas, natural forests can provide income from recreation and tourism. Payment for ecosystem services could also provide important revenue. This could be especially helpful in areas being restored and protected, where short-term income from the forest products is small or non-existent, and major investment in management is required.

Incentives for forest landscape restoration | The key limitation to sustainable forest management is the inability of smallholders to earn enough from their resources and labour. This can be due to inefficient systems of governance and tenure, to inefficient or non-functional markets and sometimes even to illegal competition for valuable timber resources. Lack of knowledge of sustainable forest management in different contexts is also an important contributing factor. Significant support for forest users in developing countries is needed to change this situation, to allow them to get a fair price for their products and improve their livelihoods. This should include access to different markets and value chains, and could provide an incentive for farmers to get organised in smallholder associations.

This could in turn facilitate more sustainable forest management e.g. through group certification. However, it is important to recognise that applying an integrated landscape approach requires identifying and managing trade-offs between the different land users, as well as ecosystem services of the landscape. This in itself is a challenging task.

Role and added value of the forestry industry | The forestry industry already plays a crucial role in sustainable forest management and is an important stakeholder in restoration of degraded forest land. Forestry industries can support resilient landscapes, adapting business models and tree planting schemes to local ecological, social and political conditions. Setting aside land to re-establish natural forest in valleys and watersheds, and using indigenous species combined with extended water buffer zones, have shown to be successful approaches, leading to reduced soil erosion and sustained water flows. The forestry industry can support and empower smallholders by using a cooperative approach and by providing a market for sustainably produced wood. It can also provide technologies for smallholder forestry and processing of products. Responsible forest industries can also promote the development of an equitable business environment and transparent governance systems that are resistant to corruption, enabling legal businesses to be profitable in the long-term.

Empowering smallholders | The World Bank suggests that almost one third of the world's population are dependent on forests or trees, to a varying degree, for their livelihoods. This is poorly reflected in national and global statistics as this dependency, or use, is often part of the informal/invisible sector. The most significant example is perhaps the global consumption of fuel wood i.e. firewood and charcoal, which accounts for slightly more than 50 per cent of the global wood harvest. Most of this consumption occurs in developing countries.

Another illustration of how difficult it can be for smallholders to benefit from forestry are the large numbers who are more or less excluded from the value addition and value chains of the global trade in forest products. This is something in the order of a billion smallholders. They also run the risk of being excluded from participation in moves to commodify different environmental services related to forest ecosystems. There are efforts to address these challenges e.g. some of the initiatives by the Forest Trends institute. Their experiences illustrate the complexity of this area and the need to identify and test a combination of solutions adapted to local conditions. Otherwise the obvious risk is that forest depletion and land degradation continue, with severe consequences for the climate, the hydrological cycle and biodiversity, as well as for local communities.

Triple-bottom line | A cost effective local industry, effective product development, and fair and transparent markets are key components that need full support, to

counteract the current destructive development within forest landscapes. A triple bottom line approach is needed to combine social, environmental and financial accounting. These three divisions are also called the three Ps: people, planet and profit, or the "three pillars of sustainability". Through investments in sustainable forest management, new and greater values can be created that can generate a more sustainable industry and improved livelihoods for poor people. Swedish experiences of combining production as well as social and environmental considerations in the forest landscape are valuable in this regard and can contribute towards restored and sustainably used mosaic landscapes. Approaches need to be adapted to fit the local context, with full attention to fundamentals including legal compliance, human rights, democracy and gender equality, as well as transparency and accountability throughout the value chain.

Contribution to the Post-2015 sustainable development agenda | If the challenges described above are consistently and coherently addressed, they have the potential to contribute to several of the UN Sustainable Development Goals (SDGs) that will substitute the UN Millennium Development Goals (MDGs) after 2015. A holistic and inclusive approach will be needed. A holistic approach is needed because management strategies for forests and trees will be different according to local goals and conditions e.g. for watershed management, for biodiversity conservation, in agroforestry systems, for production of wood and NTFPs etc. These different management approaches need to be integrated with other types of land use. An inclusive approach is needed because there are many different stakeholders involved directly and indirectly, in space and time, in the management of natural resources. This includes smallholders and urban populations, but also larger national and international companies and financial institutions, which see the potential of investing in food and other resource production. While this has triggered a debate about "land grabbing", it is important to recognise that there has been innovative work done by some companies and major investors to address both environmental and social considerations, in a systematic way, alongside economic performance. Sustainable forest management, and forest and landscape restoration, is thus fully in line with the Post-2015 sustainable development agenda and will contribute to reducing poverty, achieving food and water security, and environmental sustainability.

Building on experiences from Sweden | Restoration of degraded forest land is urgent and important for many reasons, one of them being securing water resources. Experiences, supporting conditions and prerequisites identified from restoration of Swedish forest can inform and enable new restoration initiatives, more effective processes and integration of a broader set of ecosystem services in landscape restoration, at an earlier stage than took place in Sweden. A possible entry point, building on the Swedish experience, could be the "landscape

approach”. This approach recognises the need to be holistic both in time and space and includes all concerned stakeholders. The successful restoration of Swedish forests would not have been possible without broad inclusion of different forest stakeholders. The next section describes some of the key features and processes in the Swedish restoration process from the end of the 19th century until the present time.

Conclusions

- Forests play a crucial role in the hydrological cycle, influence the amount of water available and regulate surface and groundwater flows, while maintaining and improving water quality. Rapid climate change adds to pressures on forests and risks leading to critical transitions or regime shifts in ecosystem structure and processes.
- The landscape approach has the potential to address many of the global challenges we currently face. The best opportunities for forest landscape restoration are with mosaic restoration through the integration of forest stands and trees in agricultural lands and settlements.
- An enabling institutional environment, combined with involvement of relevant stakeholders, is an important condition and prerequisite for the landscape approach to be successful.
- Significant support for forest users in developing countries is required to allow them to achieve fair prices for their products and recognise sustainable forest management as a means to improving livelihoods. Investments in fair and sustainable value chains have great promise as an approach to achieving sustainable livelihoods.
- Forest and landscape restoration, and sustainable forest management, contribute to achievement of the SDGs by reducing poverty, supporting food and water security, and enhancing environmental sustainability.

Restoring resilient landscapes – experiences from Sweden

By the end of the 1800s and early 1900s, the forest resource in Sweden was largely depleted due to a combination of industrialisation and a growing population with a need for firewood and more land for cultivation and grazing. Parts of southern Sweden had become more or less devoid of forests, while in the north, repeated

selective logging had resulted in poorly stocked forests with insufficient regeneration. One hundred years later a massive restoration effort has led to a complete change, with larger areas of managed forests than ever before, roughly a doubling of the total standing volume and a highly developed forestry industry.



Figure 5. Forest planting on pastoral Calluna heath in Soutwestern Sweden around 1900

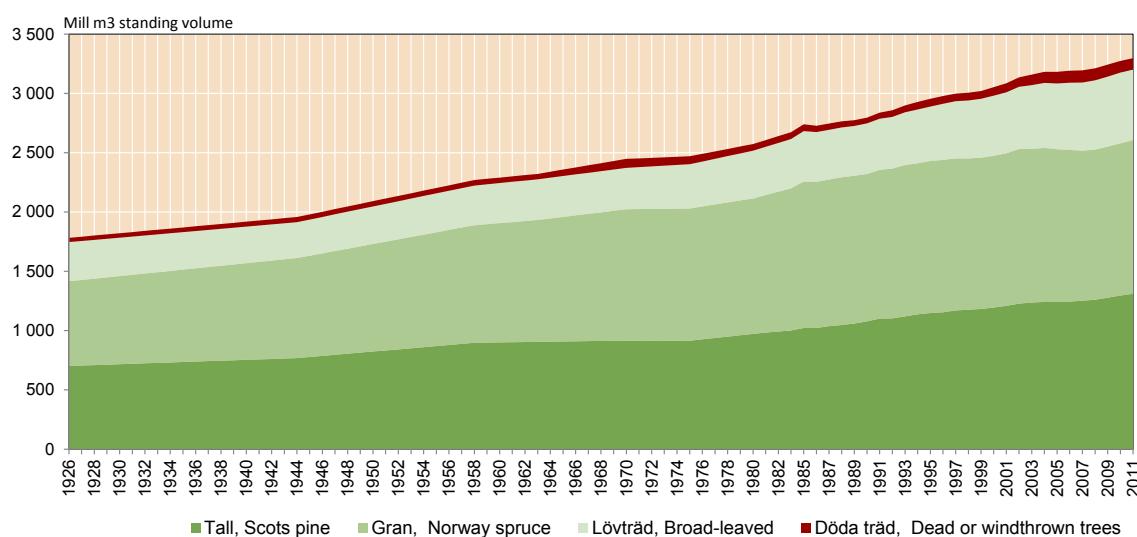
Photo: Forest Library photo archive at the Swedish University of Agricultural Science



Figure 6. Managed forest in south-western Sweden today, established on former grazing land one hundred years ago

Photo: Sveaskog

Trend for total standing volume since 1920. Moving 5-years average. All land use classes¹



¹ Excl. protected land and the land use classes High mountains and Urban areas

Source: Swedish Forest Agency, processed official statistics from The Swedish National Forest Inventory

Figure 7. The standing volume in Swedish forests has more or less doubled during the 20th century, despite a doubling of the population, a continuous increase in harvest levels, and increased set-aside of forest land for protection

Box 4. Swedish forestry history in brief



Photo: Mats Blomberg, Södra

Up until the 1700s, the use of Swedish forests was strictly regulated, and connected to the rights of the king, the nobility and the military. This was followed by a liberalisation period and acknowledgment of farmers' rights to use the land. Growing concerns for the state of the forests eventually resulted in Sweden's first forestry act in 1903, with a focus on regeneration. This was also a starting point for the establishment the SFA, designed to give information and advice on forest management to forest owners. The early restoration efforts led by the government were later broadened with establishment of regional forest agencies.

Industrial growth and increased exports of forest products remained the key focus in forest policy for most of the 20th century. Developments in science and technology enabled increased production and growth of national forest stocks. The demands on forest owners to plan and manage their forests intensified and this culminated in

1979 with forest management plans for all forest owners becoming obligatory. Fines were introduced for non-optimal management and for reluctance to harvest mature forests. This period coincided with increased mechanisation and advances in technology.

In the 1980s, this production-oriented development started to conflict with growing concerns for other values such as soil protection, nutrient recycling, biodiversity protection and water quality. A new approach of "working with ecology rather than against it" gained increased support. As a result, education and training in forest ecology and nature conservation were started and developed through the SFA, as well as by forest companies and forest owners associations (FOAs). The change manifested in the current Forestry Act (1993). This legislation aims to balance environmental goals with production goals, using soft laws with a focus on knowledge, participation and both freedom and responsibility for forest owners.

Key features which enabled the historical Swedish forest restoration project | When the Swedish restoration project started, it was primarily a question of sustaining yields, improving forest management and providing industry with wood. From a production point of view, the Swedish case can be seen as an example of successful restoration of a national forest resource. Conditions for forestry vary widely between countries and regions and experiences cannot automatically be transferred and applied. However, some of the following key components and experiences, which have enabled the Swedish process in the past, may guide future efforts for landscape transformation and restoration elsewhere in the world.

1. **Legislation, governance and clear rules** | Governance based on developments in society, transparent systems and avoidance of corruption has been key for progressive forestry development in Sweden. An enabling institutional environment that strives to respect, protect and balance the rights of different actors, not least forest owners, has made it possible for both smallholders and companies to invest in forestry. This has contributed to forestry industry development. Transparent regulatory frameworks, recognised user/owner rights, clearly marked boundaries for holdings, and a functioning and fair wood market are some of the key features in the Swedish governance system. Another important feature has been the national system for wood measurement. Timber grading in Sweden is primarily carried out by independent regional timber measurement councils. Each council ensures that measurement work is carried out in a neutral and uniform way by qualified people employed by the council, independent of sellers and buyers. This system guarantees impartial assessment and accurate prices in the supply chain.
2. **Forest tenure and ownership** Private forest ownership and tenure has been an important part of Swedish forest governance for at least 200 years. The majority of forest land in Sweden is still in the hands of its many smallholders. Holdings above five hectares in size are distributed among 350,000 owners with 250,000 holdings and are characteristically passed from one generation to another. Safe smallholder tenure paved the way for forest restoration efforts. Smallholders can trust that their investments in regeneration and sustainable forest management will give future payback to their families. The security in smallholder tenure has allowed for creation and development of well-organised FOAs, as well as competitive companies.
3. **Systems for public participation and education** | From the very start of the restoration project, public awareness raising, extension and training have been important tools, as well as subsidies and practical applications of legislation. These activities were initially carried out by the County Forestry Boards (CFBs) established by the government after the adoption of

Forest ownership

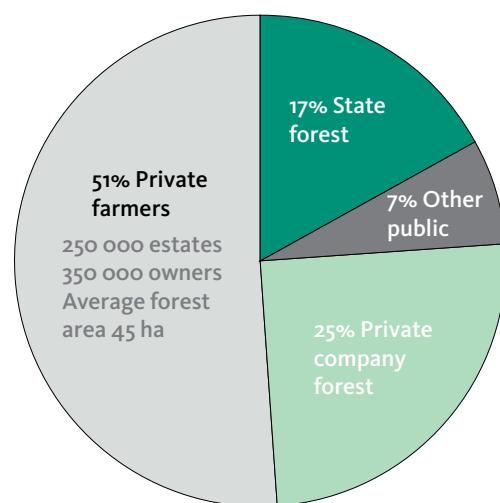


Figure 8. Today, the distribution of forest ownership classes in Sweden is roughly 50 per cent smallholders, 25 per cent private companies, and 20 per cent state i.e. state owned company, state or other public owners

the forestry act in 1903, and were later supported by other actors as well. Several civil society organisations for rural development and forest restoration became deeply involved and school classes were broadly mobilised to help in planting activities. The CFBs eventually evolved to the SFA of today.

4. **Collaboration between science and practice** | Development of forestry during the 1900s was guided to a considerable extent by science and technology. The Swedish National Forest Inventory, established in the early 1900s, provided necessary knowledge of the forest resource. At the same time, long-term research was established e.g. on stand dynamics, seed and tree improvement, soils and nutrition. Further scientific development included mechanisation, forest planning, logistics, forest health, fire prevention, weeding and soil scarification. Training and education campaigns were pivotal in the implementation of best available management practices. It was important to increase the education levels of forest technicians and to put in place a long-term plan for education of forest owners through the regional forestry agencies.
5. **A prosperous forestry industry** | The forestry industry has been an important driver for restoration of the Swedish forest landscape. It creates demand for timber and wood, and provides economic incentives for sustained yields. Today, the Swedish forestry industry exports were valued at SEK 124 billion (USD 15 billion) in 2014. Of Sweden's total industry employment, exports, sales and added value, the forestry industry accounts for 11-13 per cent. It is strongly export-oriented, and since the raw materials are mainly domestic and the import of forestry products relatively small, the industry provides a significant

contribution to Sweden's trade balance. Of the pulp and paper production, more than 85 per cent is exported, and the corresponding figure for sawn wood products is close to 70 per cent.

Key features in Swedish forest and water governance today

Sweden has entered a second restoration phase, this time addressing the challenges of preserving and developing multiple ecosystem services such as wood production, biodiversity and recreational values simultaneously on the same land. Integration of water resources in forest management is one of these challenges. Getting there will be a question of defining goals, direction and best practices, while acknowledging some of the key features that enabled the restoration of Swedish forest in the 20th century, as mentioned above. Water management is closely linked to sustainable forest management, and during its continued work, the SIWI Cluster Group on forest and water aims to further build on these components, as well as incorporating new developments.

- Building on former key strengths** | Most aforementioned key features are still relevant strengths in Swedish forest governance. They include: a strong forestry industry, inclusion of private forest smallholders and smallholders associations; transparent governance; established systems for participation; strong links between science and practice; and well defined roles for forest owners and markets. One illustration of how the structural components in place can enable new directions and practices, is the rapid breakthrough for forest certification in Sweden.

Forest certification was introduced in the late 1990s through the Forest Stewardship Council (FSC) and the Programme for the Endorsement of Forest Certification (PEFC). More than half of productive forest is today certified by either FSC or PEFC. The certification systems add additional environmental and social considerations to government rules and regulations, such as integration of water resource management.

- Broad participation and an integrated landscape approach**

The current Swedish Forestry Act of 1993 aims to balance production, environmental, social and cultural goals. Substantial deregulation has been implemented. Also, the previous top-down approach of the earlier act is replaced by a focus on participation and capacity building of forest owners, training and stakeholder dialogues, in the development of management practices and policies. This has contributed to increased trust between stakeholders and better compliance with regulations. The current Swedish forestry model also builds on an integrated approach, where conservation measures are incorporated into the production landscape of the forested area. Protection of forest diversity is done in designated forest areas as well as through general environmental consideration in the day-to-day management. This approach is particularly important for preserving and improving water quality, in small streams to lakes, to rivers and mires.

- Dissemination of Best Management Practices**

Dissemination and promotion of Best Management Practices (BMP) is important for development of

Sweden's share of the world's:

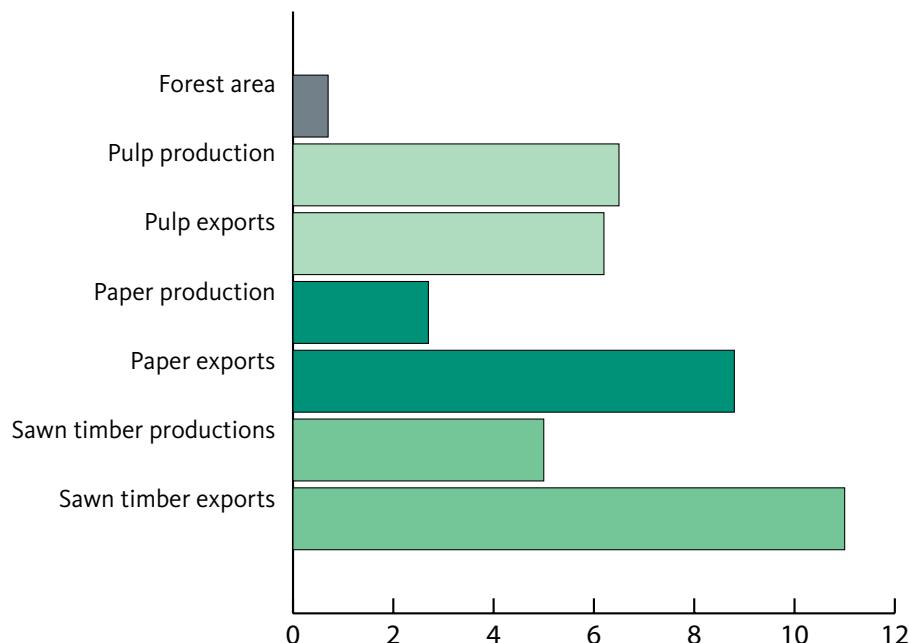
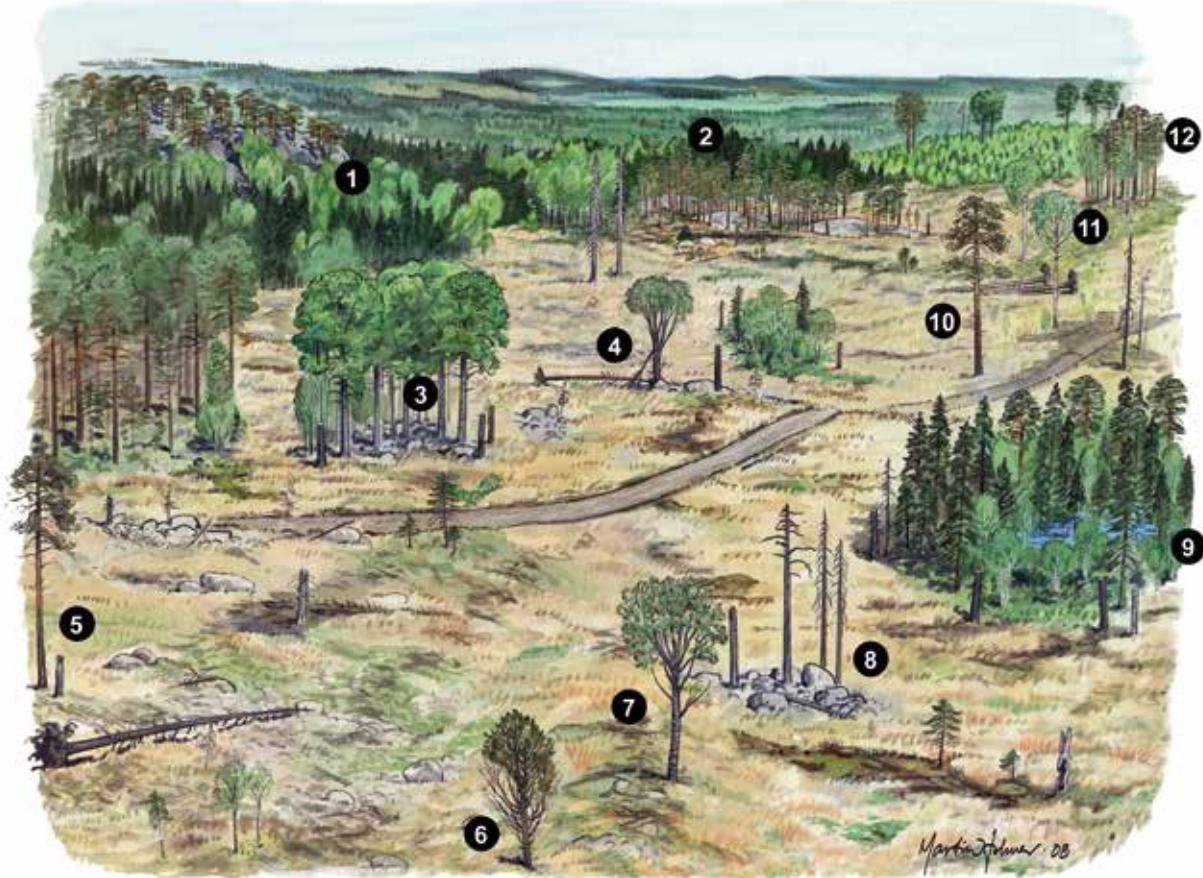


Figure 9. Sweden is the world's second largest combined exporter of paper, pulp and sawn wood products, despite its small share of the world's forest area (Swedish Forest Industries Federation, Swedish Forest Agency, PPI, FAO)



1. Edge zone, sensitive biotope against rock edge
 2. Non-productive bedrock outcrop
 3. Trees with natural value, thick aspens, group of deciduous trees
 4. Tree-shaped sallow
 5. Old trees with fire scars or cultural significance
 6. Thick old juniper
 7. Tree shaped mountain ash
 8. Dead wood, dry trees
 9. Sensitive biotopes, flagship species
 10. Nature value tree, old pines
 11. Deciduous trees
 12. Tree groups

Figure 10. Examples of environmental consideration in a forest production landscape. Retained groups of trees and sensitive biotopes will be allowed to continue to develop high conservation values in the next generation (Figure Sveaskog)

water conservation on forest land in Sweden. These BMP can be an inspiration for applications that will be relevant in varying degrees elsewhere, depending on regional and site-specific conditions. There are interesting trends in Swedish forest management practices, with implications for water resource management, in terms of the following:

- site and climate adaption
- classification of water systems e.g. naturalness, ecological value
- development of detailed plans before harvest
- inventories and monitoring
- development of maps and Geographical Information Systems (GIS) showing legal and natural boundaries
- avoidance of monocultures along water courses
- establishment and maintenance of green corridors
- technical development of machines to avoid damage

- adaptations to aquatic ecosystems in planning and construction of roads

4. Forest management plans | Developments in the use of mapping, inventories and surveys are key strengths of Swedish forestry, and involve both companies and smallholders. Forest management plans, where each stand is documented and classified, are widely used by all categories of forest owners. Comprehensive information required for making forest management decisions is provided in the plans. Stand descriptions normally include long-term goals, as well as production and environmental parameters and values, at a detailed level. This information can be digitized and forestry planning today is normally carried out on a laptop computer, with all information available and updated online.

5. Integration of water resources in forest management | The EU Water Framework Directive (WFD), adopted in 2000, required Swedish forest stake-

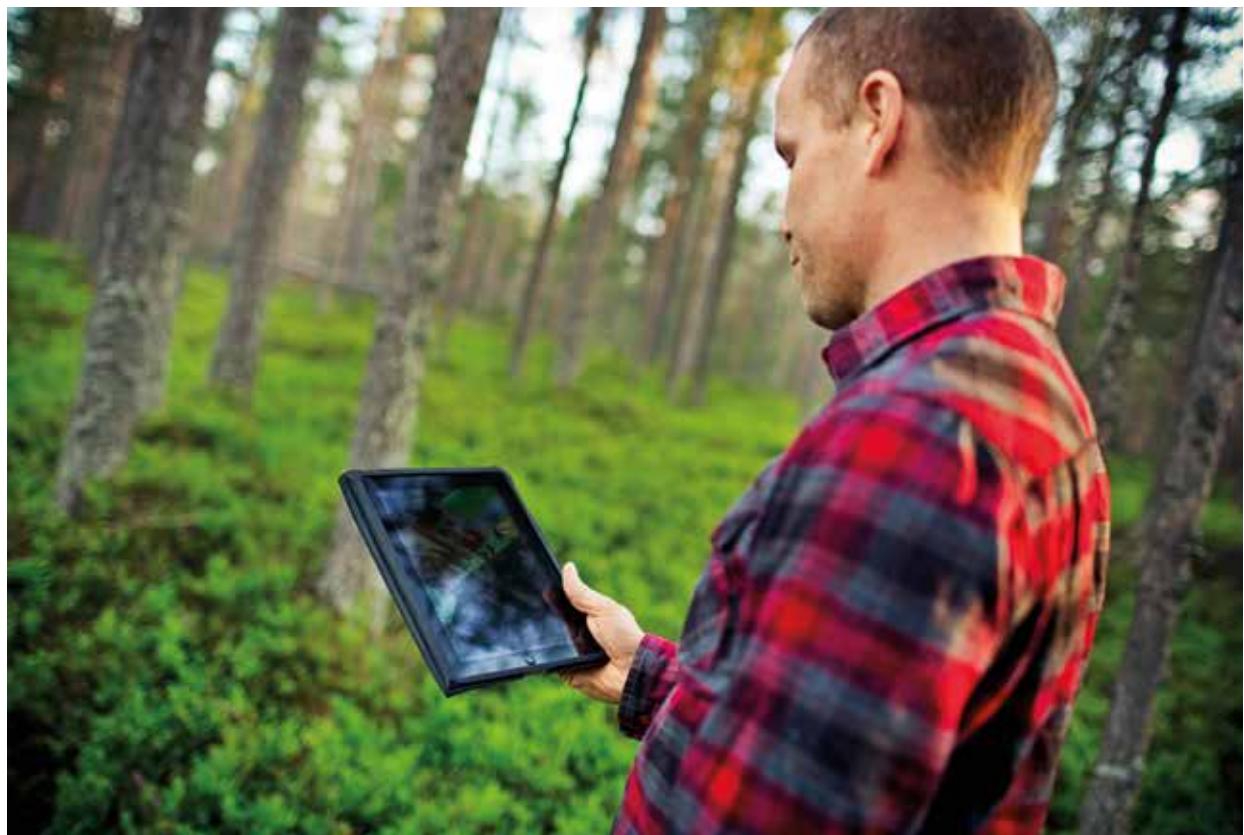


Photo: Sveaskog

Figure 11. Digital forest management plans are widely used by Swedish forest owners

holders to strengthen integration of water resources in Swedish forestry practices. Several private and public initiatives have since been launched. Water availability and water related disasters are not an issue in most parts of Sweden, so the main focus of these initiatives is water quality and securing biodiversity. One example is the World Wide Fund for Nature (WWF) in Sweden, which has, together with the state owned company Sveaskog and private FOAs, developed a water management toolbox for forest planners. The FOAs use this toolbox in a training program for their members on how to improve water management in their forests. Sveaskog has developed a comprehensive strategy for "Water landscapes". These water landscapes are carefully selected forested watersheds, where consideration to water resources is the guiding principle when planning for production and conservation set-asides. Parallel to these initiatives, the SFA invited stakeholders to a multi-stakeholder participatory project, where soil and water management was a major theme. Environmental targets for stream and lake buffer zones and stream passages were developed through a participatory process. The targets are supposed to be implemented in forestry in general and to be applicable in the whole productive forest landscape.

Challenges in Swedish forest governance today |

Challenges such as a globalised market, environmental

problems and climate change will have profound impacts on forests and forestry today. They will increasingly lead to a greater demand for a more holistic view of sustainable forest management, which includes productivity, environment and social aspects. The current Swedish forest policy is characterised by a high degree of flexibility described as "freedom under responsibility". While the ambitions in policy are high regarding both forest management as well as environmental and social considerations, in some aspects, the forest legislation merely stipulates minimum requirements. These include an obligation to regenerate forest on forest land, a ban on harvesting trees under a certain age and a requirement to prevent outbreaks of pests. Education and information activities are vital tools in order to realise those high policy ambitions. There are differing perceptions of the effectiveness of this "freedom under responsibility" principle to serve forest policy goals. It is considered more successful within the private sector, while many NGOs consider the progress towards environmental and social objectives to be slow and inadequate. Forest and landscape restoration will continue to be both a major challenge and an opportunity. In Sweden, attention is increasingly being paid to restoration of a wider range of environmental and social values. On a global scale, emphasis on some of the key structural features described in this report still needs to be developed.



Photo: Stefan Bleckert

Figure 12. Careful planning and consideration of the many small streams is the basis for good water ecosystem quality further downstream

Box 5. Vilhelmina model forest – building resilient landscapes using a participatory, public approach

This pilot project covers 850,000 hectares in far northern Sweden. The objective is to achieve long-term sustainable management of the landscape, based on local participation in Vilhelmina. This is being done by designing a strategy that involves local stakeholders e.g. reindeer herders, farmers, foresters, hydrology firms and outdoor recreation groups. A variety of production methods are tested and evaluated for their effect on ecosystem services e.g. as farm and forest production, water resources, biodiversity, social values, reindeer herding etc. The results are used to show possible adaptations of practices to avoid negative effects on water resources in forestry, hydropower and farming. Experience from the project shows that small adjustments can have big positive impact.

Cooperation and collaboration are fundamental parameters in the project and the emphasis is on participatory processes in planning, implementation and research efforts. Knowledge is shared through both traditional teaching and using the forest as a classroom, including in the demonstration areas created in various parts of the landscape. Improved dialogue between the province's various stakeholders through sharing knowledge is a beacon in the process.



Photo: Leif Jougda

Conclusions

- Sweden has undergone a massive forest restoration project in the last one hundred years, building a thriving natural resource base from largely depleted forest. Lately, forest policies and management strategies have started to integrate consideration of values such as climate change mitigation and adaptation, biodiversity, social aspects and water resources management. Sharing experiences and lessons learned from the Swedish restoration process and current forest management practices can help forest stakeholders in other countries to restore their degraded landscapes more effectively.
- Key components of the successful Swedish forest development have been: clear ownership of forest land; a transparent societal system; avoiding corruption which can, for example, lead to land grabbing; public participation in policy development; capacity building of forest stakeholders as well as collaboration between science and practice; and the building of a prosperous forestry industry. These components remain important cornerstones in Swedish forest governance and management today and enable a continuous improvement in forest management and integration of water resource management in forests.
- Since the adoption of the EU WFD, many private and government initiatives have been launched to secure water resources in forest landscapes. Several are partnerships between the private sector, government agencies, local and national authorities, research institutions and NGOs.
- Forest landscape restoration will continue to be a major challenge and opportunity, as Sweden has entered a second restoration phase focused on environmental and social values. On a global scale, the emphasis still needs to be on structural aspects of forest management. Experiences from the Swedish restoration effort can enable a more effective process and integration of a broader set of ecosystem services in landscape restoration, at an earlier stage, than in Sweden, for the benefit of people, forests and water.
- There are still areas that need improvement in Swedish forestry and water resources management. An exchange of experiences between forest stakeholders in Sweden and in other parts of the world would therefore be of mutual benefit.

How can the Swedish resource base contribute?

This chapter provides examples and ideas on how the Swedish resource base could contribute in a more effective and coherent way to forest and landscape restoration globally. The resource base related to forest landscape restoration includes the forest authorities, universities and other research-based institutions, industry, consulting companies and smallholder organisations, civil society, environmental and tree planting NGOs and the Swedish church. All these organisations are involved in a variety of sustainable forest management support and development initiatives, most often without any coordination.

Multi-stakeholder dialogues as an entry point for forest landscape restoration | Sweden has a long history of bilateral aid and cooperation with developing countries. Forest management has been an integral part of this. Initially it was an objective in itself and later it became part of support for rural development in community forestry, agroforestry and national forest governance institutions.

Swedish support for the forest sector is not new therefore, and neither is support for water resource management and rural development. However, integration of the sectors has been weak and interventions have had various degrees of success. Considering the complex values and needs of forest and landscape restoration described in this report, more coherent actions are called for, as well as concerted government support and financing for involvement from a broad array of sectors and stakeholders.

To have the necessary impact and to ensure a broad inclusion of stakeholders, as well as national legitimacy, active participation is required at the highest national level. Academia, government agencies, extension services, the private sector, civil society and smallholders, from both Sweden and developing country partners, need to participate. Exchange visits by delegations of multi-stakeholder groups are needed between Sweden and the partner countries. These will facilitate understanding of the history of development in land-use and current policy, legislation, monitoring, land-use, technologies, and dialogue processes. This active participation is vital to reach a common understanding on needs and ways forward.



Figure 13. Discussion between Indonesian and Swedish forest stakeholder in Central Kalimantan, Indonesia

Photo: SIWI

Initiating a programme with an integral and broad dialogue process could create a tool both to anchor wide ownership for change and to identify goal oriented reforms and projects. Such dialogue, albeit with more narrow and less well-defined goals, have been tested in the past with the Swedish International Development Cooperation Agency's (Sida's) "Partner Driven Cooperation" (PDC) in Indonesia and in Vietnam. The PDC-dialogue with Indonesia has been commended by both sides and could, with some evaluation, become a model for bilateral forest and landscape restoration dialogues.

Supporting processes of dialogue could also include south-south cooperation and networking. "International Training Programmes" (ITP) is one example of such network building and co-operation. Sida has financed ITP programmes in the forest sector for more than 25 years and has supported the building of an important global network of forest experts. These experts are trained in sustainable forest management, forest governance, forestry industry and forest certification.

Integrating water resource management in the ITP forest training programmes could be the next step.

A multidisciplinary approach is called for | While, as previously mentioned, support for forest development cooperation and rural development is not a new Swedish priority, forest landscape restoration is a complex challenge. This is because it has a broad spectrum of objectives e.g. sustainable intensification of agricultural production, supporting improved and resilient livelihoods and fair value chains. Depending on setting, there will be differing baselines related to local specifics of ecology, culture, degree of poverty, infrastructure and resource pressure in each targeted landscape. Each intervention needs to have a multidisciplinary approach. Furthermore, strengthening of policy and institutions at both local and national levels needs to be done concurrently. The broad and stakeholder-owned dialogues described above would constitute an important first step.

It is clear from our workshop process that the Swedish resource base has broad and extensive experience from previous cooperation in developing countries. There is also a wide consensus that the Swedish experience of former and current forest management and policy formation has relevance for forest and global landscape restoration in. This includes organisation of smallholders, development of transparent and fair value chains, step-wise and continuous support for policy development, and policy adaption to evolving scientific understanding. It also covers the ability of government agencies to

develop campaigns and dialogues, for application and inclusion in changing policies. Depending on what is identified as being needed at a national and a regional scale in any given developing country, there is a rich Swedish “smorgasboard” of competencies and a readiness to cooperate.

Swedish experiences of bilateral cooperation and opportunities for a coordinated approach | There are several good examples of former and on-going Swedish bilateral cooperation in the forest sector. An interesting case of technical support that has led to wider societal development, is the “Bai-Bang paper mill project” (see box 6). Water was vital for transport and processing, so proximity to water was an important criteria for site selection. The programme was successful in overcoming many initial challenges and criticisms. One major challenge was to restore large areas of degraded lands into productive forests, while at the same time transferring these lands to smallholders. Another challenge was to minimise risks of contamination of downstream water used for irrigation of rice fields.

Swedish experience also includes full-scale industrial operations, as well as examples where industry is involved in aid and development. StoraEnso, the Finnish pulp and paper manufacturer, which was formed by a merger between Swedish mining and forestry products company Stora, and a Finnish forestry products company, is one example. It has operations in Brazil that include restoration of the Atlantic forest in lower and riverine positions



Photo: SSC Forestry

Figure 14. Experts in sustainable forest management trained in Sida supported training programmes



Photo: SSC Forestry

Figure 15. Swedish technology used in small scale forestry, Chile

in the landscapes. Water management is one of many objectives there. IKEA, with technical support from SLU and others, has been working on restoration of rainforests in Malaysian Borneo since 1998.

Other experiences include working with relevant farmer extension services, organisations and value chains. Swedish family forestry associations and SLU, with support from the SFA and Sida, have been involved in extension dialogues with farmers in Africa. On the commercial and value chain side, SCC forestry is involved in development of new business opportunities for small-scale forest farmers and small-scale wood industries in Chile and Indonesia. Vi-agroforestry is supporting inclusion of trees in agriculture by smallholders around Lake Victoria in East Africa.

Academic expertise on research on the linkages between water, and trees and agroforestry in semi-arid regions include several constellations of Swedish research groups at SLU, Gothenburg University and Stockholm University. Possible trade-offs and synergies between tree densities in landscapes and water conservation, under the apparent re-greening of the Sahel, is one example. The SFA has supported FAO with capacity building in forest resource assessments and development of national forest programmes together with SLU in, for example, Zambia and Nicaragua.

In addition, SIWI, together with the World Agroforestry Centre (ICRAF) and with support from Sida, has led a

study in the Red River and Mekong River delta areas, on resilience and response to climate change among farmers. This involved adopting a more holistic and multi-sector approach to management of water risks and hazards at the policy and institutional level, as well as promotion of BMPs at the local level, including management and planting of trees.

There is thus a strong Swedish baseline to build on for bilateral cooperation and support of sustainable forest management and forest landscape restoration. The challenge is to develop a coordinated approach that brings different actors and sectors together from forestry, agriculture, water resources, etc. The result would be a pooling of expertise on creating an enabling environment in terms of policies and institutions, and how to promote private sector engagement in sustainable forest management among both smallholders and the forestry industry.

Opportunities for enhanced Swedish engagement in multilateral processes and programmes

| There are a number of global initiatives for forest and landscape restoration e.g. the Bonn Challenge and the New York Declaration on Forests. Another interesting initiative is the Governor's Climate and Forest Task Force, where national states and federation states, in both developing and developed countries, join forces to oversee and support forest and landscape restoration, and the development of forests and forest governance. This cooperative effort covers more than 20 per cent of the world's tropical forests, including 75 per cent of Brazilian

forests and more than half of Indonesia's forests. FAO is increasingly working to support national and international forest and landscape restoration processes. Sweden contributes to FAO funds, part of which are used for this task. Another relevant FAO process is the Forests and Water Action Plan, which calls for action in the areas of science, policy, economics and land management practices.

The Consultative Group for International Agricultural Research (CGIAR)-systems Challenge programme #6 "Forests, Trees and Agroforestry", with ICRAF and CIFOR as main partners, is at the forefront of landscape-based development research, monitoring, analysis and landscape transition processes. CIFOR is currently working actively with compilation and analysis of knowledge around forest and landscape restoration, and has been invited to interact with the Cluster Group for Forests and Water.

Swedish participation has so far been limited in these initiatives, but they could provide useful fora for dialogue and development of bilateral cooperation, using the approach described above.

Key challenges where Swedish actors can contribute |

In the different seminars and discussions arranged by the Cluster Group, a number of key challenges in water and forest resource management were mentioned multiple times. Swedish experience and knowledge that could be of special relevance for these challenges include the following:

- governance, tenure rights and transparency

- systems for broad public participation and capacity building in policy development and best management practices
- development of a prosperous and diverse forestry industry, based on product development and successful marketing and sale of the major wood products delivered by the forest e.g. energy, saw logs and logs for pulp and paper, and securing sufficient return on investments in sustainable forest management
- organisation and empowerment of smallholders to ensure fair payments for their wood, efficient extension services and support and organisation of cost-efficient wood supply chains to the industry
- entrepreneurship and business management including marketing, sale and export
- cost-efficient and safe logging systems that are also adapted for small-scale businesses
- technology for competitive small and medium size mechanical wood industries
- combining production objectives with social and ecological objectives in the same forest area based on day-to-day considerations, best management practice and well trained forest supervisors and forest workers
- tools for forest management including inventories, maps, GIS, and different information and communications technology solutions
- fair and transparent systems for wood measurement and for making payments to smallholders
- integration of water resources in forest management
- forest certification and Chain of Custody certification, including cost efficient group certification of smallholders
- health and safety aspects in logging and forestry
- collaboration between science and practice



Photo: SSC Forestry

Figure 16. Swedish experience of health and safety aspects in logging and forestry can be of relevance to the forestry industry in developing countries

The previous list, with no ambitions to be in any way exhaustive, indicates the many and diverse opportunities for Swedish actors at all levels. Stakeholders at the regional, national, local and private business levels can all play a much more proactive role in international forest processes and collaboration. Sharing, adapting and developing the systems and tools already available in the Swedish or Scandinavian market could generate important instruments to speed up forest sector development in targeted countries. This could also be an interesting business opportunity for Swedish companies. The specific needs of different countries varies, but a broad-based approach could lead to better mutual understanding of needs, as well as improved coherence in Swedish support.

A general obstacle for Swedish participation is a lack of finance for instruments through which Swedish actors can participate in bilateral cooperation. In comparison with other countries, Swedish active partnerships often fall short due to limited resources. Stronger links for national participation in multilateral support could be made through, for example, secondments of national experts or support of Public Private Partnerships (PPPs) that draw on both private and public sector expertise. Another problem is that Swedish development support, concentrated on the least developed countries, is not eligible for cooperation with middle income countries, which possess the basic enabling conditions required for initiating forest landscape restoration e.g. Indonesia and Brazil.

Potential Swedish platforms for coordination of enhanced participation | The Swedish Policy for Global Development (PGU), founded in 2003, is a crosscutting policy for all ministries and government agencies, aimed at creating coherent support for global sustainable development. It is currently undergoing a revival and has been made a priority within the Swedish government and individual ministries. The revision of the PGU is highly ambitious. The Swedish Minister for Development Cooperation at the Ministry of Foreign Affairs is responsible for it, and has the authority to work with all ministries to identify where they can support sustainable, global development. The revised policy is expected to align with the SDG's, of which several are linked to the benefits of water security, and forest and landscape restoration. The PGU could be a framework for Swedish engagement as outlined in this report.

In addition, the Swedish Government has decided to develop a National Forest Programme (NFP), to support the development of a bio-economy and to promote the forest value chain. The programme will be developed through a process of dialogue with the broad Swedish forest resource base. This NFP is expected to stimulate several other Swedish strategic initiatives and policies e.g. on climate and environment, rural development, industrialisation, development of exports, tourism, etc. International forest cooperation is one part of the



Photo: LRF Skogsägarna

Figure 17. Exchange of experiences between Swedish and Kenyan small-holders

Box 6. Bai Bang paper/pulp mill project

Bilateral discussions with Northern Vietnam in 1970 were the start of plans to build a pulp mill. An agreement was signed in 1974. The project cost was estimated at 770 million SEK. This included forestry support to supply the pulp mill. The project started in 1975 when the war ended. The mill itself was inaugurated in late 1982 with all parts operational. Swedish consultants carried out all components of the project. This included infrastructure, mill construction, forest management establishment etc. A forest research centre operated from 1975 to develop silviculture, forest management and fibre delivery to the mill.

The operation was problematic for the first decade or more. The supply of fibre was unreliable due to only partially successful silviculture. Low productivity, poor social conditions among workers and even the use of forced labour were some of the other problems encountered. The mill was dependent on a large contingent of Swedish consultants for a long time. However, the operations stabilised in the late 80s and early 90s. One interesting factor in establishing better supply was the "Doi Moi reform" which opened up a free economy and brought in long-term tenure of land for farmers. This resulted in an increasing supply of wood from farmers. In 2012, 45 per cent of the raw material came from smallholders and some government companies. The total Swedish cost for the project was 2.7 billion SEK and the project was the subject of critical debate in Sweden for a long time. However, today, after 30 years, it is a valuable asset in Vietnam and a base for regional value chains, which improve smallholder livelihoods and promote diversification of income.

strategy. Coordination of the Swedish resource base support for sustainable forest and water management, and forest landscape restoration could become another important element.

Conclusions

- Given the complexity of forest and landscape restoration, a more coherent approach and concerted government support and financing for involvement of a broad array of sectors and stakeholders are called for. Broad bilateral dialogue could be a good instrument to initiate multi-sector, bilateral programmes and to prioritise needs.
- Opportunities for bilateral support of sustainable forest management have a strong base to build on in Sweden. The challenge is to develop a coordinated and multidisciplinary approach. This would bring together natural resource actors and sectors etc. with social science experts. The focus would be on how to create an enabling environment in terms of policies and institutions, and how to promote private sector engagement in sustainable forest management with both smallholders and the forestry industry.
- The same Swedish experiences would be valuable in multilateral processes, and Swedish actors from both the public and private sectors should participate to a higher degree than at present. Swedish experiences should be shared in on-going global processes and activities such as the Bonn Challenge, the New York Declaration, the Governors Climate and Forest Task Force, and the FAO Forests and Water Action Plan.
- Stronger links between multilateral support and national participation could be made e.g. through secondments of national experts or supporting the establishment of PPPs that draw on both private and public sector expertise.
- PGU and the Swedish Forest Programme could become national platforms for coordinating Swedish participation in multilateral processes, bilateral dialogues and private sector initiatives related to sustainable forest and water management.

Sweden catalysing positive global change

We – the Cluster Group for water and forests – have started with a mission to highlight the global importance of forests, and of sustainable forest management to secure water resources. In the process of discussions within our group and more broadly with forest and forestry sector stakeholders, we have concluded that establishing resilient landscapes is the most promising way forward, and that Swedish experiences and competencies have potential to contribute to this important challenge.

In Sweden we have, over a long period of time, step by step, restored degraded and partly deforested forest landscapes into a rich natural resource, which has become a cornerstone in Swedish economic and societal development. Lately, we have also tried to balance production with other values and ecosystem services such as water resource management, biodiversity and climate change mitigation. The forest landscapes increasingly provide us with fossil-fuel-free products and energy systems, sustainable raw materials for construction and building interiors, paper and fibres for new innovative uses. At the same time they support secure water access for cities and rural communities, protect and enhance biodiversity and reduce the negative effects of climate change. Achieving the right balance between ecosystem services is not easy. Challenging trade-offs need to be discussed and debated but experiences from the last 100 years of forest restoration in Sweden provide a strong foundation for constructive dialogue and scaling up of forest landscape restoration.

It is clear from seminars and discussions, organised by the Cluster Group, that the Swedish resource base has broad and extensive experience from cooperation in developing countries. Depending on identified needs at specific national and regional scales and for specific landscapes, there is a rich Swedish “smorgasbord” of competences along with a readiness for cooperation, as discussed in this report.

Sweden could become a visionary leader in the crucial and urgent mission to build and restore resilient landscapes on the many hundreds of millions of hectares of degraded forest land on the planet. Sweden can, at the same time, learn from partners from all over the world. Their experiences and knowledge can help us in the “second phase” of our own forest restoration project. We have been successful in restoring a productive forestry to become one of the world’s largest combined exporters of paper, pulp and sawn wood products. Today we need to address global challenges such as climate change and preserving and developing multiple ecosystem services in forest management. An enhanced exchange of experiences between forest stakeholders in Sweden and in other parts of the world would therefore be of mutual benefit.

We sense a readiness for more active involvement in global water and forest management from many of the participants in workshops and seminars arranged by the Cluster Group 2014/15. Swedish knowledge as related to governance, sustainable forest management and entrepreneurship, as well as responsible and sustainable industrial development, can contribute much more than it currently does to multilateral processes such as the Bonn Challenge, the New York Declaration, and the Governor’s Climate and Forest Task Force.

Integrating these areas in the revival of the Swedish Policy for Global Development as well as in the Swedish National Forest Programme would provide a platform for the Swedish resource to work from, and from which to develop an integrated and coordinated approach to bilateral and multilateral dialogues and programmes. Intensified and more coherent Swedish engagement in restoration of degraded forest landscapes globally would be a substantial contribution to the fulfilment of the SDGs. Building resilient landscapes is key to sustainable development and Sweden could catalyse positive change in the management of forest landscapes at the global level, by sharing existing extensive experiences and knowledge.

List of acronyms

BMP	Best Management Practices	NTFPs	Non-Timber Forest Products
CFBS	County Forestry Boards	PDC	Partner Driven Cooperation
Cluster Group	Stockholm International Water Institute, Swedish Water House, Cluster Group for Water and Forests	PEFC	Programme for the Endorsement Of Forest Certification
CIFOR	Centre for International Forestry Research	PGU	The Swedish Policy for Global Development
FAO	Food and Agricultural Organization Of The United Nations	PPPs	Public Private Partnerships
FLR	Forest Landscape Restoration	SDGs	Sustainable Development Goals
FOAs	Forest Owners Associations	SFA	Swedish Forest Agency
FOCALI	Forest, Climate and Livelihood Research Network	Sida	Swedish International Development Cooperation Agency
FSC	Forest Stewardship Council	SIWI	Stockholm International Water Institute
CGIAR	Consultative Group of International Agricultural Research	SLU	Swedish University of Agricultural Sciences
GIS	Geographical Information Systems	SSC	
ICRAF	World Agroforestry Centre	Forestry	Svensk Skogscertifiering AB
ITP	International Training Programmes	SWH	Swedish Water House
MDGs	United Nations Millennium Development Goals	UN	United Nations
NFP	National Forest Programme	WFD	EU Water Framework Directive
NGOs	Non-Governmental Organisations	WWF	World Wide Fund for Nature

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About the Swedish Water House Cluster Group for Water and Forests

SIWI Swedish Water House has brought together Swedish experts and stakeholders in forest-related water management. The aim has been to establish key knowledge and experience within Swedish forest sector, which could benefit global water resource management. Representatives from Focali, the Swedish Forest Agency, SLU Global, SSC Forestry, StoraEnso, Sveaskog, SIWI Climate Change and Water Programme and SIWI Swedish Water House are core members of the group.



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