

Ecosystem management: Some key initiatives by UNEP



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Table of contents

Introduction.....	3
Resuscitating the second lung.....	4
Replenishing ecosystems with rainwater.....	6
Developing Liberia's water policy	8
Protecting Kenya's water towers.....	10
Lake Faguibine: Restoring a lifeline	12
Reducing carbon emissions from forests	14
Guarding the forest guardians	16
A common approach in adapting to climate change	18
Setting the pace: Science-policy interface for biodiversity and ecosystems.....	20



Introduction

Human well-being ultimately depends on the health of the ecosystems which envelope and sustain us. We exploit ecosystems for the food, water, and timber we need for everyday living. We depend on ecosystem processes to regulate natural cycles and keep diseases at bay. We rely on them for recreation, instruction and mental and spiritual enrichment.

UNEP places emphasis on strengthening national capacity for ecosystem management for human well-being by focusing on bundles of ecosystem services.

This pamphlet highlights some key initiatives by UNEP to implement the ecosystem management programme in line with its Medium-Term Strategy (MTS) for the period 2010 – 2013. The MTS identifies six thematic priority areas, among them Ecosystem Management Programme.

The pamphlet features activities on restoration of degraded ecosystems, addressing deforestation and forest degradation, and adaptation to climate change, among others.



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Resuscitating the second lung

The Congo basin forest stretches across Cameroon, Central African Republic, the Democratic Republic of the Congo (DRC), Equatorial Guinea, Gabon, and the Republic of the Congo. Some 60 million people from these countries depend on it for their sustenance. The Congo basin forest is a natural mosaic of 400 mammalian species, 280 reptile species, 900 butterfly species and 10,000 plant species. At 2 million square kilometres, it is the second largest rainforest in the world, second only to the Amazon forest in Latin America.

However, the forest is under serious threat from a combination of factors like illegal logging and settlements, shifting agriculture, population growth, oil and mining industries. The forest is losing 1.5 million hectares – half of Lesotho – every year.

To stem this loss, UNEP is working with Congo Basin Forest Partnership (CBFP) to conserve 29 protected areas, and promote sustainable forestry and community-based conservation in 11 priority landscapes spanning the Congo basin.



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UNEP is supporting the Goodwill Ambassador of the Congo Basin Forest Ecosystem, the Nobel Laureate, Professor Wangari Maathai in her endeavours. Her role is to engage donors in high level lobbying on behalf of the Congo Basin Forest Ecosystem. She also serves as the co-chair of the Congo Basin Forest Fund. So far, the governments of Norway and the United Kingdom have contributed US\$ 200 million to the Fund.

The Fund is tailored to develop viable alternatives to logging, mining, and felling trees for firewood and

subsistence farming. Funded activities will follow guidelines established by the Central Africa Forests Commission (COMIFAC) Convergence Plan, which is a common vision for sustainable and joint management of the sub-region's forest resources.

DRC, which hosts 54% of the Congo basin forest, is one of the nine pilot countries in the UN-REDD Programme, an initiative that seeks to maintain forest ecosystem services and maximize their carbon stocks while delivering community and livelihood benefits. The country is in the process of developing a national strategy for monitoring, assessment, reporting and verification of forest cover and carbon stocks.

Through its Great Apes Survival Partnership (GRASP), UNEP is helping countries halt encroachment into DRC's Virunga National Park, Africa's oldest park. The park is home to 50% of the mountain gorilla population and to numerous other endemic and endangered species. UNEP's work in Virunga is part of a broader initiative that is assisting governments in drafting and developing national environmental laws, regulations and guidelines. In addition, the wide-ranging strategy also includes post-conflict environmental assessment that mirrors similar assessments undertaken by UNEP in the Balkans, Afghanistan, Iraq, Liberia, Lebanon and the Sudan. ■

Key Facts

- 1988: Protected area management programme ECOFAC (Ecosystèmes Forestiers D'Afrique Centrale) is born; focuses on the six countries
- 1996: Conference on the Dense Moist Forests of Central Africa (CEFDHAC) highlights need for regional collaboration
- 1999: Yaounde Declaration on the Congo Basin forest, by Heads of State; gives birth to COMIFAC
- 2000: COMIFAC meets for the first time in Yaounde approves the COMIFAC Convergence Plan
- 2002: The Congo Basin Forest Partnership (CBFP) established at the World Summit on Sustainable Development





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Replenishing ecosystems with rainwater

Many countries suffering from water shortages ironically have a high potential for rainwater harvesting. For instance, Ethiopia and Kenya are capable of meeting up to six times the water needs of their current populations.

Not all rainfall is harvested for drinking and agricultural uses. A third is needed for ecosystem sustenance - forests, grasslands and healthy river flows. Rainwater harvesting at a wider scale provides a buffer against climate-change impacts such as floods and droughts. Unlike large dams which have high evaporation, small-scale earth-pans and ponds keep water for long periods. This contributes to groundwater recharging as well as replenishing environmental flows that are critical for healthy ecosystems.

UNEP's rainwater harvesting projects have changed the way rain is perceived in Africa, Asia and the Pacific, and Latin America and the Caribbean regions. UNEP is supporting several countries in these regions to adopt rainwater harvesting for ecosystem sustenance, and to improve



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livelihoods of local communities.

More than half-a-million people in Kenya's Kajiado District are now able to harvest rainwater for domestic use, ecosystem regeneration, and other productive purposes. UNEP's project in Antigua and Barbuda further demonstrates the use of rainwater in recharging groundwater aquifers.

Capacity building is a central aspect in UNEP's interventions. Rainwater harvesting projects in

Nicaragua and Guatemala focus on developing the capacity of rural and indigenous communities, especially women, to benefit from rainwater to meet domestic water needs, as well as increase agricultural production for improved livelihoods.

The ecosystem benefits accruing from rainwater harvesting were clearly demonstrated in the Philippines when Typhoon Frank struck in July 2008. The typhoon killed 200 people, displaced many others, and caused landslides and flooding that washed away rice fields. However, the impacts were minimal in the Tigum Aganan catchment area where the rainwater harvesting

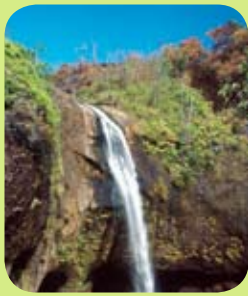
project was implemented. The ponds and terraces constructed by communities regulated the flood water. Also, following the pollution of water sources by the typhoon, rainwater was the only source of safe drinking water thus protecting communities from contracting water-borne diseases.

The communities in Kenya, Philippines, Guatemala, Nicaragua, Antigua and Barbuda attest to the World Water vision that, "the real revolution in water resource management will come when stakeholders have the power to manage their own resources." ■

Key Facts

- Estimated: 2 out of every 3 people in the world will live in water-stressed areas by the year 2025
- In 2004 UNEP facilitated the establishment of the Rainwater Partnership to promote and mainstream rainwater harvesting activities
- UNEP developed digital maps of rainwater harvesting potential of 9 African countries: Botswana, Ethiopia, Kenya, Malawi, Mozambique, Tanzania, Uganda, Zambia, Zimbabwe (see "<http://www.unep.org/rainwater/Maps>" <http://www.unep.org/rainwater/Maps>)
- 874 million hectares of land in Africa could benefit from increased agricultural production by increasing the managed use of water





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Developing Liberia's water policy

"There are diverse and often conflicting interests in the provision and management of water. The institutional mechanisms for delivering sustainable water management appear inadequate. Yet the world can no longer afford to relegate action on water to the fringes."

Achim Steiner, Executive Director,
United Nations Environment Programme

Liberia's fourteen year civil war, which ended in 2003, led to a humanitarian catastrophe. It led to multiple internal displacements of hundreds of thousands of people, disrupted supply of basic social services, increased the vulnerability of women and children to extreme poverty, hunger, disease, and practically destroyed its infrastructure. Facilities such as the Mount Coffee Water Plant responsible for the supply of drinking water to 600,000 people in Monrovia and several surrounding towns were destroyed. As a result, deaths due to water borne diseases remained high. And, this situation was expected to possibly deteriorate further as populations returning to these areas were expected to increase.



© UNEP/PCD/MB

In 2005, Liberia requested UNEP's assistance in developing a long-term and sustainable water management policy to guarantee good quality and sufficient supply of drinking water and industrial water, and safeguarding all water resources.

UNEP organized a multi-stakeholder committee comprised of representatives from relevant Government agencies, NGO's, UN agencies, the European Union and the private sector to oversee the development of the water policy. UNICEF along with UNDP backstopped the

work of this committee through the provision of financial and technical support.

To enhance Liberia's national capacity in the development and implementation of its water policy, UNEP facilitated national and regional training workshops for country water experts and government officials. The regional workshops provided Liberia with a chance to learn from the water policy experiences of other West

African countries that share international water catchments with Liberia.

As a result of UNEP's efforts, Liberia's national water management policy is now a reality. The policy has been subjected to a participatory review in meetings of stakeholders at the national level. Liberia's improved management of water resources will be essential for achieving broader economic development goals. ■

Key Facts

- Liberia covers 111,369 square kilometers
- Population is estimated at 3.5 million
- It has abundant surface water in six watersheds: Cavalla, Cestos, Lofa, Mano, Saint John and Saint Paul
- UNEP conducted post-conflict environmental assessment after 14 year of civil war in 2003
- Liberia did not meet the Millennium Development Goals target of developing national Integrated Water Resources Management plan by 2005





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Protecting Kenya's water towers

The Mau Forest Complex which at 400,000 hectares is seven times the size of Nairobi sits on aquifers that provide water to millions of people in the Rift Valley and western Kenya. The Mau comprises 16 contiguous forest blocks, gazetted as forest reserves or trust land forest. It also includes six satellite forest blocks that are not adjacent to the main blocks but are part of the same ecosystem.

Over the years, almost a quarter of this forest has been lost to human settlements, illegal logging, farming and a host of other human activities.

Mau's plight became national news when Kenya's Prime Minister and the Minister FOR Environment overflowed the area in UNEP-organized reconnaissance flights. What they saw in Mau were vast clearings of land that are manifestation of a dramatically receding forest.

UNEP is supporting the Government of Kenya through its ecosystem management programme to realign its



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environmental programmes to tackle the Mau Forests' degradation.

UNEP's assessments have unveiled Mau's immense value. At least twelve rivers spring out from the Mau and flow to different corners of the country. Together with other ecosystem services, the rivers breathe life and vitality into the world famous Maasai Mara National Reserve, Serengeti and Lake Nakuru National Parks. UNEP's assessments also found that for every clearing in the Mau

forest, there was another part of the ecosystem that suffered consequences.

With the advice of UNEP and its other partners, the government of Kenya has set up a Task Force to conserve these forest ecosystems on which millions of Kenyans depend for sustenance. As technical advisor of this Task Force, UNEP has placed on the table a set of technological and development options.

The Maasai Mau forest, which is one of the 16 forests in Mau Complex, is hosting the Community

Based Integrated Forest Resource Conservation and Management Project (COMIFORM). UNEP and its partners are engaging the local community around this forest block in managing the forest. COMIFORM aims to help local communities develop alternative sustainable sources of income without reversing the gains made in conserving the forest. The project is anchored on participatory forest management, a system that clearly defines the stakes that a community has in a forest, thus enabling people to embrace and protect the forest as their own. ■

Key Facts

- The Mau Forest Complex is the origin of the main rivers flowing into five lakes: Victoria; Turkana, Baringo, Nakuru, and Natron
- Over 5 million people live in the sub-locations crossed by these rivers
- The Mau Complex has a total hydropower potential of 508 MW, which represents 50% of the current total installed capacity in Kenya
- USD286 million - the current annual market value of goods and services from tea, tourism and energy sectors in the ecosystems





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Lake Faguibine: Restoring a lifeline

Mali's Lake Faguibine dried up in the 1970s with far-reaching implications for the livelihoods of more than 200,000 people living in its hinterland. The local communities were forced to abandon their traditional livelihoods, which revolved around agriculture, livestock, forestry and fishery.

The inflows to Lake Faguibine are mainly from the Niger River's flood waters. During prolonged rainfall in the Fouta Djallon highlands in Guinea, the Niger River floods and forces water to flow through two channels into the lake.

Unfortunately, climate change has led to erratic rainfall patterns as well as advancing the Sahara desert southward. Sand dunes block parts of the channels, thereby preventing the replenishment of Lake Faguibine. In addition, the little water that is still flowing in the channels is used for various purposes. Upstream, people use the water for large scale irrigation and to produce hydropower.

© UNEP: 2008 (Africa: An Atlas of changing environment)



All these factors combine to deprive Lake Faguibine of much needed water.

At the request of the Government of Mali, the United Nations Environment Programme (UNEP) is implementing a project to rehabilitate the Lake Faguibine ecosystem. This project follows in the footsteps of UNEP's successful ecosystem rehabilitation of the Iraqi Marshlands, the world's largest wetland ecosystems. The Marshland was rehabilitated through re-flooding resulting in widespread increase in vegetation

cover and increased accessibility to clean, drinking water for more than 100,000 people living in or near the Marshlands.

In Mali, UNEP is working with local partners to sensitise communities upstream and downstream on the need to regulate and preserve the water flow in the Niger River and in the channels. The project's participatory management planning will reconcile upstream and downstream competition for water, for equitable human wellbeing.

The Lake Faguibine ecosystem restoration project involves re-flooding of the lake's 600 square kilometers. A rehabilitated Lake Faguibine will re-energize the delivery of the lake's ecosystem services. For instance fishery was once estimated at 5,000 tons annually. Its restoration will boost livelihoods of local fishermen and provide food to thousands of people as well as migratory waterbirds.

The restored ecosystem will also revive recession agriculture along the lake's coastlines. Produce from livestock, farming, and fishing will be transported through invigorated water transport. ■

Key Facts

- Mali has over 12 million people
- At 1.24 million square kilometers Mali is one of the largest countries in Africa
- Only 3.8 percent of the country's land is arable
- At its fullest, Lake Faguibine ranks among the largest lakes in West Africa; covering at least 590 square kilometers (in 1974)
- USD 12 million – 15 million the estimated cost of rehabilitating Lake Faguibine ecosystem





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Reducing carbon emissions from forests

Trees and forests provide us with essential health, recreational, aesthetic, and other benefits, many of which we literally can't live without. Unfortunately, forest management in some parts of the world has traditionally focused less on the services provided by forest ecosystems and more on the timber that could be produced.

Between 1990 and 2005, the rate of deforestation has averaged about 13 million hectares a year, occurring mostly in tropical countries. We are now losing about 200 square km – an equivalent of 18,100 soccer playing fields – daily.

The loss of forests releases carbon dioxide to the atmosphere. The forestry sector, mainly through deforestation, accounts for about 17% of global greenhouse emissions, making it the second largest greenhouse source after the energy sector.

As the forests disappear, the natural sink they provide for absorbing of carbon dioxide is lost with them. This leaves more carbon in the atmosphere and exacerbates global warming.



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At the United Nations Framework Convention on Climate Change (UNFCCC) 13th Conference of Parties (COP-13) in December 2007, Parties agreed to step-up efforts towards reducing emissions from deforestation and forest degradation (REDD) in developing countries.

To effectively combat deforestation and forest degradation, countries need regulatory frameworks. The UN Environment Programme (UNEP), the UN Development Programme (UNDP) and the Food and Agriculture Organisation of the United Nations (FAO)

teamed up in the UN-REDD Programme, a unique collaborative initiative. It seeks to strengthen the international policy dialogue on REDD and build confidence among negotiators and Parties to include REDD in new and more comprehensive climate change agreements after the Kyoto protocol expires in 2012.

The UN-REDD programme is also helping nine pilot countries to manage their forests in a manner that maximizes their carbon stocks and maintains their ecosystem services and while delivering community and livelihood benefits. Countries that have been identified for the quick start phase are Bolivia, Democratic Republic of Congo, Indonesia, Panama, Papua New Guinea, Paraguay, Tanzania, Vietnam, and Zambia. These countries are in the process of developing national strategies, establish-

ing robust systems for monitoring, assessment, reporting and verification of forest cover and carbon stocks.

This quick start phase will pave the way for long-term engagement of REDD in the carbon market through payment for ecosystem services. To facilitate this, the project is working on decreasing delivery risk and structuring transparent, equitable incentives. UN-REDD's high level collaboration and community level engagement seeks to ensure that local experiences inform the global legislative action that will in turn have impacts on local communities.

UNEP is also working with some of the countries in the quick start phase in related initiatives such as the Great Apes Survival Partnership (GRASP), which is set to launch pilot activities to test the potential for achieving UN-REDD's objectives in Central Africa and Southeast Asia. ■

Key Facts

- REDD was first introduced on the UNFCCC agenda at the Conference of the Parties (COP11) in December 2005
- At COP-13, Norway pledged an annual contribution of up to 3 billion Norwegian Kroners (432 million US dollars) towards a global initiative on REDD
- The challenge is to set up a functioning international REDD finance mechanism that can be included in an agreed post-2012
- UNEP hosts the secretariat of the UN-REDD Programme, for which Norway has donated US\$ 35 million





© Mark Leighton/GRASP

Guarding the forest guardians

Saving the great apes is also about saving people. By conserving the great apes, we can protect the livelihoods of many people who rely on forests for food, clean water and much else. Indeed, the fate of the great apes has both practical and symbolic implications for the ability of human beings to move to a sustainable future.

Kofi Annan, former UN Secretary General

Great apes live in forest ecosystems of 23 African and Asian countries (range States). With the mantle of ecosystem sustainability draped around their shoulders, great apes play a key role in maintaining the health and diversity of their ecosystems, usually through seed dispersal and creation of gaps in the forest canopy. This accords them a key status as flagship species. A decline of their populations is a key signal of an underlying decrease of other species in the ecosystems.

Great apes are faced with unprecedented threats from the combined effects of hunting, illegal logging and forest land farming. They could vanish from the wild in less than 50 years.



© Mark Leighton/GRASP

UNEP's Great Ape Survival Project (GRASP) aims to conserve viable populations of great apes and their forest habitats through pro-poor conservation and sustainable development strategies. These forested tropical ecosystems regulate the climate and provide food, water, medicine and timber.

Although widespread illegal logging remains a challenge, GRASP's actions led to the seizure of 70,000 cubic metres of illegal timber in Indonesia in 2007. In the same year, GRASP worked with partners to raise

awareness on the impacts of degazetting two forest reserves in Uganda. Such efforts assist to protect forests legislatively and socially, by sensitizing communities on the value of forest ecosystems.

In line with the Kinshasa Declaration, GRASP provided financial support to twenty-seven field projects in the range countries. The projects strengthened community participation in biodiversity decision-making in seven range States. They also resulted in strengthened wildlife law enforcement in Cameroon, Democratic Republic of Congo and Indonesia, the High Conservation

Value Forest (HCFV) Land Assessments and models in Indonesia.

Apart from facilitating the field projects, GRASP provided technical support to 20 range States. This support strengthened the policies of national authorities in nine countries. It also improved trans-boundary collaboration between seven West, Central and East African range states. Such teamwork is the essence of GRASP. It plays a key role in GRASP's effort to tap into its ability to leverage political support and technical expertise to help mitigate dangers posed to great ape populations and their habitats. ■

Key Facts

- GRASP is a Type II Partnership (WSSD), launched in May 2001
- Great apes (chimpanzees, bonobos, gorillas and orangutans) are found in Africa and South-East Asia
- 2009 - the International Year of the Gorilla





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A common approach in adapting to climate change

Climate change is one of the most pressing global issue of the day. Its impacts weigh heavily on the resilience of many ecosystems. Climate change has long term impacts including more frequent and heavy floods, prolonged droughts and erratic rainfall. These impacts further affect food production as many countries depend on rain-fed agriculture.

Most developing countries lack the capacity to develop and implement adaptive measures to cope with climate change impacts.

In response to this need, UNEP is supporting developing countries to build their capacity for collective, timely and efficient adaptation to climate change. UNEP's climate change adaptation strategy focuses on building the resilience of ecosystems and economies that are most vulnerable to climate change.

UNEP is implementing quite a number of adaptation projects in several regions. Through its engagement with and support to local communities, UNEP is working



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towards identifying adaptation needs that can be addressed through illustrative adaptation measures. For instance UNEP is promoting the sustainable development of the Central Karakorum National Park of Northern Pakistan through better coordination of ongoing initiatives, development and implementation of an integrated management plan, as well as setting up knowledge management and environmental monitoring systems. The project, which is funded by the Government of Italy, also promotes awareness raising activities geared towards decision makers. A similar project is being implemented in the Mt.

Kailash Sacred Landscape in the Himalayas with support from the Government of Norway . The project's main objective is to initiate and promote transboundary climate change adaptation mechanisms within this unique landscape shared by Nepal, China, and India. A regional Cooperation Framework (RCF) will be developed through a consultative process in line with the Mountain Biodiversity Goals of the UN Convention for Biological Diversity (CBD).

UNEP is further spearheading the development of a Global Climate Change Adaptation Network to further leverage and unify adaptation efforts. The Network's primary goal is to help developing countries increase

their key adaptive capacity by mobilizing available knowledge and technologies. Composed of ground facilities, regional centres and an international support group of technical institutions and experts, the Network will mobilise scientifically credible and policy relevant information for decision making.

The Network will enhance collaboration between sectors and regions and also help facilitate the sharing of best practices and lessons learnt. As networking unfolds, core competencies will be converged and directed towards developing long-term responsive climate-change adaptation measures. ■

Key Facts

- UNEP and WMO host the Intergovernmental Panel on Climate Change (IPCC)
- UNEP has supported countries to develop National Adaptation Programmes of Action (NAPA's), and is now working with countries to implement the identified priorities
- Many countries have been assisted to undertake Technology needs and National capacity needs assessments
- The UNFCCC Subsidiary Body for Scientific and Technological Advice (SBSTA) at its 28th session *recognized that regional centres and networks undertaking work relevant to climate change play an important role in enhancing adaptation*





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Setting the pace: Science-policy interface for biodiversity and ecosystems

UNEP is leading the follow up to the Millennium Ecosystem Assessment (MA) to facilitate the implementation of the MA findings and recommendations. In line with the global strategy on MA follow-up, UNEP is implementing a Swedbio-funded project designed to respond to the objectives of building and maintaining the knowledge base on the links between biodiversity, ecosystem functioning, ecosystem services and human well-being; Strengthening country capacity to operationalize methods and tools for integrating the MA approach and its findings and recommendations in national development planning and policy; Disseminating the findings of the MA and its conceptual framework, tools and methodologies to relevant stakeholders.

In parallel, UNEP is leading a global initiative to strengthen the science-policy interface on biodiversity and ecosystem services. It is well recognized among the scientific and policy community that the various present science-policy interfaces are not working as efficiently they should. The scientific and policy community requested UNEP to facilitate an intergovernmental process to explore the options available for strengthening the science-policy interface including the



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possibility of establishing a new mechanism.

The first meeting organized by UNEP and hosted by the Government of Malaysia was held at Putrajaya (10 - 12 November 2008) in which 78 countries and 28 organisations participated. The ad hoc intergovernmental and multi-stakeholder meeting on an Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) focused on finding efficient ways to improve the science-policy interface on biodiversity and ecosystem services. This will provide for the first time a common science platform to facilitate better policy uptake of assessment findings and recommendations by member states. It will also support building capacity of developing countries to undertake scientifically credible and robust studies on biodiversity and ecosystem services. ■

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