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# A Review of International Development Co-operation in Solid Waste Management

A report from the ISWA Task Force on Globalisation and Waste Management

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# ISWA

International Solid Waste Association

**The International Solid Waste Association (ISWA) is a global, independent and non-profit making association, working in the public interest to promote and develop sustainable waste management. ISWA has members in more than 60 countries and is the only worldwide association promoting sustainable, comprehensive and professional waste management.**

ISWA's objective is the worldwide exchange of information and experience on all aspects of waste management. The association promotes the adoption of acceptable systems of professional waste management through technological development and improvement of practices for the protection of human life, health and the environment as well as the conservation of materials and energy resources.

ISWA's vision is an Earth where no waste exists. Waste should be reused and reduced to a minimum, then collected, recycled and treated properly. Residual matter should be disposed of in a safely engineered way, ensuring a clean and healthy environment. All people on Earth should have the right to enjoy an environment with clean air, earth, seas and soils. To be able to achieve this, we need to work together.

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# Executive Summary

**The issue**

Rapid urbanisation and increasing global consumerism are driving unprecedented levels of waste generation in low and middle income countries. This rising tide of waste represents an increasing environmental, social and economic burden, particularly for the poorer parts of society. In many parts of the world waste collection is still limited to more affluent areas and communities, disposal via open dumping is still widespread, and many of the world's poorest people depend on informal recycling activities to survive.

**The role and scale of development co-operation in solid waste management**

International development co-operation has the potential to play a key role in the face of this challenge, helping to improve governance and build the local capacity and infrastructure necessary for effective solid waste management (SWM). An estimated $4 billion was committed to development co-operation in SWM between 2003 and 2012. The proportion (3-year average) of development finance for SWM has more than doubled from 0.12% to 0.32% over the 10 years (see **Figure 1**). However, this is still only a tiny proportion of overall development finance. Considered in terms of the population of the countries receiving SWM development finance in 2012, it equates to just $0.09 per capita. This compares with per capita levels of $2.43 in the water and sanitation sector, and $31 for all development finance.

**Loan and grant funding**

The majority (70%) of this support has been in the form of lending from development banks, amounting to $2.8 billion over the 10 years from 2003 to 2012. This has provided access to capital in low and middle-income countries and helped develop much-needed SWM infrastructure, particularly collection systems and engineered landfill capacity. Grant-funded support is the other key element of development co-operation, amounting to an estimated $1.2 billion between 2003 and 2012, comprising over 3,000 grants. Around three quarters of total grant funding has been used to increase local skills and capacity and to provide other technical assistance on issues such as the informal recycling sector, private sector participation, cost recovery, awareness raising and climate change. The remaining grant funding has been used to fund the purchase of refuse collection vehicles and containers; and to provide SWM in the aftermath of natural disasters or as part of conflict-related relief efforts.

**Changing trends in SWM development co-operation**

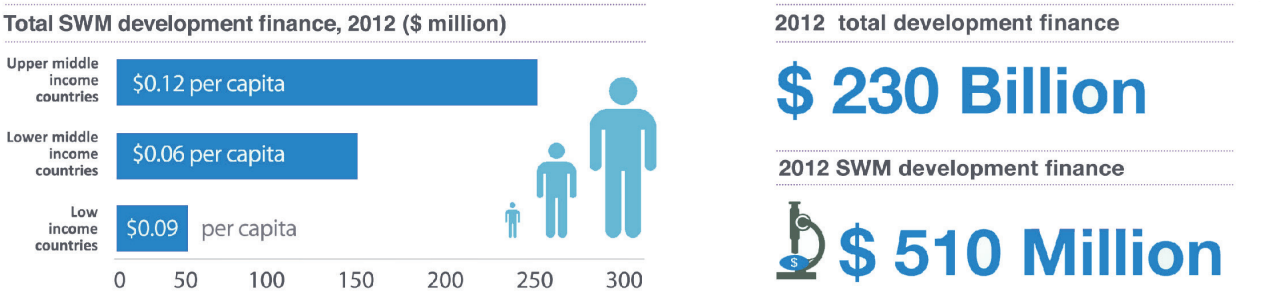
Following the failure of a number of high profile SWM infrastructure projects at the preparation stage, there was a general move amongst the major donors active in SWM in the early 2000s to an approach focused on increasing local capacity and skills. Since that time, the systems-based approach of *Integrated Sustainable Waste Management* has become increasingly established in development co-operation, an approach that seeks to ensure that both the physical and governance issues of SWM are addressed in a holistic way.

There have also been significant changes in the wider development co-operation landscape, with emerging economies, such as China and Brazil, becoming key development co-operation partners, and an increasing expectation that financial support provided to low and middle income countries will require the blending of finance from official sources with philanthropic, commercial and private sector sources. Importantly, the replacement for the Millennium Development Goals, perhaps in the form of a new set of Sustainable Development Goals, will set the agenda in the post-2015 development co-operation landscape.

### The geographical distribution of SWM development co-operation

The geographical spread and distribution of SWM loan funding between 2003 and 2012 is very uneven: one country (China) received 12 loans with a total value of $510 million (18% of total development finance lending for SWM). The top ten countries for SWM-focused development finance are all middle income countries, and account for over two thirds of the total value of both grants and loans over $4M (in descending order: China, India, Morocco, Turkey, Azerbaijan, Vietnam, Venezuela, Ukraine, Tunisia and Argentina). Overall, low-income countries appear to have received significantly less financial assistance - only ten Sub-Saharan countries received grants or loans of more than $4 million, together accounting for less than 5% of the total.

This uneven geographical distribution may be because middle-income countries are better able to access and absorb development finance but it is certainly an issue that needs to be considered carefully to ensure that development finance on SWM is targeted appropriately (see **Figure 2**).




### The future for SWM development co-operation

SWM-focused development co-operation has the potential to continue to play a key role in: helping communities in the poorer parts of the world develop the capacity, systems and infrastructure they need to manage waste; protecting human health and the environment; creating jobs; and conserving resources. Development finance in the form of grants to build local skills and capacity, and concessional lending to provide much needed capital, will be an essential element of this activity. **Table 1** summarises key issues that will be important for the future of development co-operation on SWM.

**Table 1:** Summary of recommended actions

| Action | Recommendation |
|---|---|
| **Raise the political priority of SWM, both locally and on the development agenda.** | SWM is a key issue for communities and municipal authorities and yet is not identified as a 'primary' issue with a specific Millennium Development Goal (MDG), nor is it likely to have a specific Sustainable Development Goal (SDG). But, prioritising SWM does allow numbers of MDGs/ SDGs to be tackled in an integrated way. There is also potential for using SWM itself (i.e. a clean city) as a proxy-indicator for good governance. SWM needs to be recognised as a key element of international efforts to reduce poverty and environmental degradation.<br><br>In particular, a better evidence base is needed to illustrate how SWM can assist in meeting development goals and serve as an essential element of post 2015 development targets. This evidence base needs to include information on the full economic costs and benefits of SWM in a developing world context, including external economic costs (e.g. health and environmental impacts), so as to provide the evidence base to donors and development banks for funding and supporting development co-operation in SWM. |
| **Maintain the emphasis on capacity building and good governance.** | Much has been achieved to date on this issue but more needs to be done to ensure that communities have the necessary institutions and skills to deliver sustainable, locally appropriate waste management systems. It is important that the issues continue to receive support and grant funding. |
| **Improve access to capital finance for infrastructure development.** | Improving access to capital finance will be essential to help develop the necessary infrastructure for managing increasing levels of waste in low and middle income countries. This will need to include improving access to loan funding from development banks but also the use of development finance to facilitate and leverage investment from private investors, and from philanthropic and climate finance sources. The reach of the majority of development finance on SWM also needs to be extended beyond a small number of middle income countries to the lowest income countries that need it most. |
| **Develop better, and more comprehensive data on development co-operation in SWM.** | There is limited comprehensive data on SWM-focused international development co-operation activities. Good data on development co-operation in SWM is critical to ensure that activities are targeted where they are needed most and to allow robust assessment of effectiveness. |
| **Develop a better understanding of SWM investment needs.** | Comprehensive information on the need for support and investment on SWM in low and middle income countries is also lacking. Work by the World Bank suggests that waste management costs in low and middle income countries is likely to increase significantly over coming years, but there is no clear picture of the level and distribution of investment that will be needed. This data will be critical to plan ahead and to ensure that funding is directed appropriately. |
| **Establish effective partnerships between donors, receipient governments and other development co-operation stakeholders.** | As the nature of development finance changes, the blending of finance from different sources will become increasingly important. For these approaches to be successful, effective partnerships between donors, philanthropic organisations, NGOs, the private sector and local and central government will be key. The SWM sector also has excellent operator models for illustrating how the private sector and civil society can both be engaged to deliver better services, access investment, protect communities and the environment, and create jobs. |

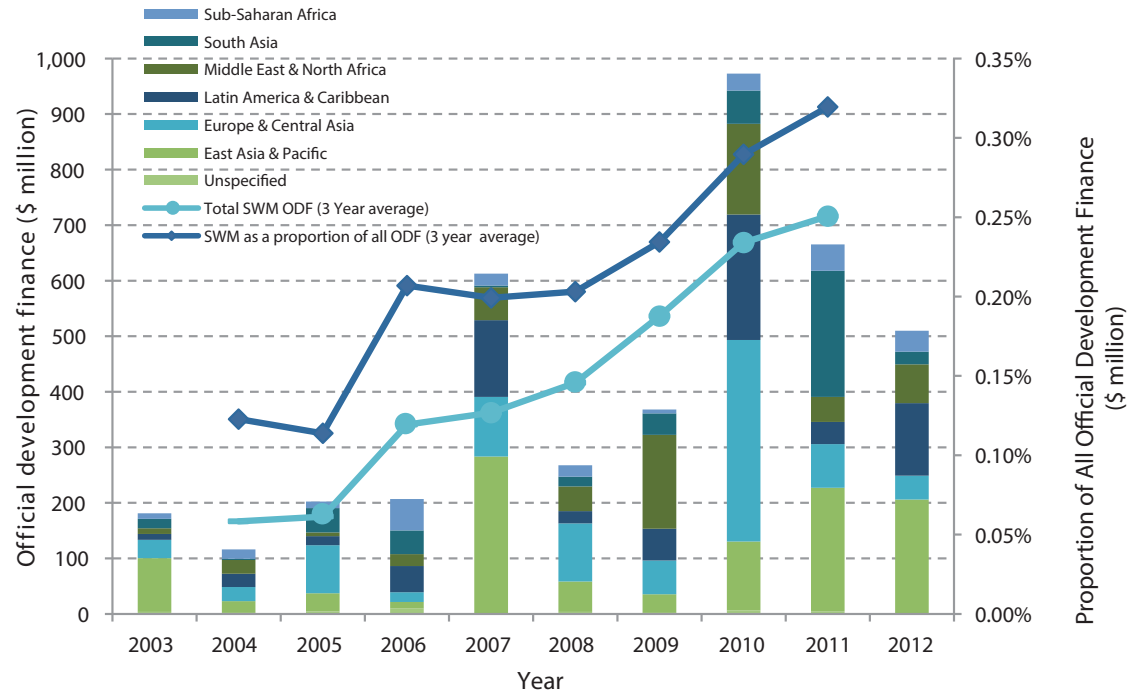



**Figure 1:** SWM-focused official development finance by region (2003-2012)

Note: Based on an analysis of data from the Organisation of Economic Co-operation and Development (OECD, 2014)

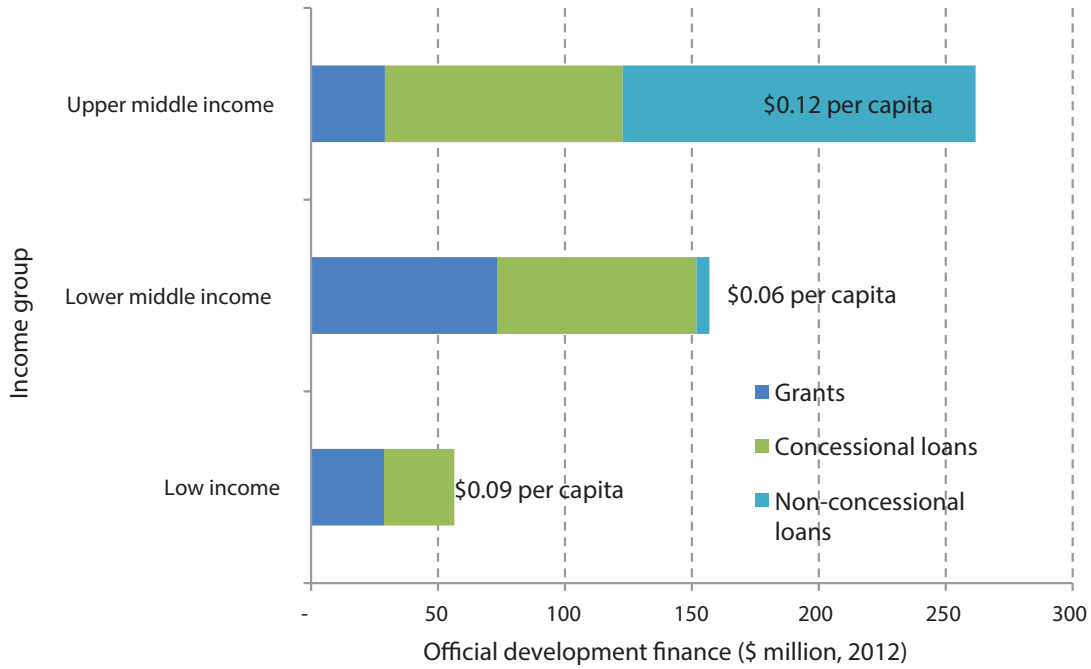



**Figure 2:** Summary of SWM-focused official development finance distribution by recipient income group

Note: Based on an analysis of data from the OECD (2014) and United Nations (2014)

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| | |
|---|---|
| **ADB** | Asian Development Bank |
| **AusAID** | Australian Agency for International Development (since 2014, incorporated into the Department of Foreign Affairs and Trade (DFAT) |
| **CDM** | Clean Development Mechanism |
| **CIDA** | Canadian International Development Agency |
| **DFID** | Department for International Development |
| **DAC** | Development Assistance Committee |
| **EBRD** | European Bank for Reconstruction and Development |
| **eWaste** | Waste electrical and electronic equipment |
| **GIZ** | Deutsche Gesellschaft fur Internationale Zusammenarbeit |
| **GWM** | Globalisation and Waste Management |
| **IADB** | Inter-American Development Bank |
| **IBRD** | International Bank for Reconstruction and Development |
| **IDA** | International Development Association |
| **IFC** | International Finance Corporation |
| **ISWA** | International Solid Waste Association |
| **JICA** | Japan International Cooperation Agency |
| **KfW** | KfW Entwicklungsbank |
| **MSW** | Municipal Solid waste |
| **NAMA** | Nationally Appropriate Mitigation Action |
| **NGO** | Non-governmental organisation |
| **ODA** | Official Development Assistance |
| **ODF** | Official Development Finance |
| **OECD** | Organisation of Economic Co-operation |
| **OOF** | Other Official Flows |
| **SWM** | Solid waste management |
| **TFGWM** | Task Force for Globalisation and Waste Management |
| **UNDP** | United Nations Development Programme |
| **UNEP** | United Nations Environment Programme |
| **UNFCCC** | United Nations Framework Convention on Climate Change |
| **UN-HABITAT** | United Nations Human Settlements Programme |
| **USAID** | United States Agency for International Development |
| **WHO** | World Health Organisation |

# 1. Background

The report is part of ISWA's Globalization and Waste Management project, which is the first worldwide project dedicated to studying the linkages between Globalization and Solid Waste Management.

Globalization is one of the major challenges for the long-term sustainability of waste management and vice-versa. Appropriate waste management is one of the key conditions for sustainable globalization. There is an increasing need to focus on the linkages between globalization and waste management and to understand their nature.

Recognizing that globalization creates substantial changes and puts new and unprecedented challenges for waste management, ISWA established a Task Force (TFGWM) to study the linkages between Globalization and Solid Waste Management in September 2010. This report is part of the third work strand within the GWM scope, addressing challenges around ***Global Recycling Markets, Material Flows and Trafficking.***

Previous research results, documents and summary reports are available on line through ISWA's Knowledge Base. The final overarching results of the GWMTF work are presented in a report, where the current document is placed in context: ***Final report of the ISWA Task Force on Globalisation and Waste Management***, September 2014, ISWA . The overarching report, this report and ohter main outputs can be downloaded from the Globalisation and Waste Management ISWA web-page.

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# 2. Introduction

Rapid urbanization and increasing global consumerism is driving unprecedented levels of waste generation in low and middle income countries. A recent study published by the World Bank for example (Hoornweg and Bhada-Tata, 2012), suggests that quantities of waste generated by the World's cities will nearly double by 2025. This rising tide of waste represents an increasing environmental, social and economic burden, particularly for the poorer parts of society. In many parts of the World, waste collection is limited to more affluent areas and communities, disposal via open dumping and uncontrolled landfill is still widespread, and many of the World's poorest people depend on informal recycling activities to survive.

Improving solid waste management (SWM) services in developing economies is fundamental to economic growth and poverty reduction and has the potential to boost local economies, at the same time as protecting human health and the local environment, conserving resources and mitigating climate change impacts (Wilson, 2007).

The international development co-operation activities of national donors, development banks, and the wider international community play a key role in improving solid waste management conditions for the World's poorest communities. This assistance has helped low and middle income countries to improve SWM conditions by building local skills and capacity, providing capital for equipment and infrastructure, creating better conditions for informal workers and tackling SWM issues in the aftermath of humanitarian crises.

This report presents a review of international development co-operation in SWM. The report is structured as follows:

- **Section 2** provides an overview of development co-operation and provides a summary of key issues and trends in the 'development' sector.

- **Section 3** introduces the role of international development co-operation in the SWM sector and discusses the nature, scale and key themes of development co-operation in the SWM sector. It also presents a more detailed review of development finance flows associated with SWM and considers the main donors and recipients of SWM development finance.

- **Section 4** presents some overall conclusions and recommendations.

# 3. An overview of development co-operation

Development co-operation[1] refers to efforts by the international community to help improve economic, social, environmental and political conditions in the developing world. These efforts include a wide range of activities including:

- Emergency humanitarian development finance following natural or conflict-related crises.
- Grant or loan funding to assist with service and infrastructure development.
- Technical assistance in a wide range of areas including health, education, water and sanitation, energy, industry, government and civil society, research and development.
- The supply of commodities or equipment.
- Debt relief.

The stakeholders involved in development co-operation are numerous, diverse and constantly evolving. However, in broad terms, stakeholders can be divided into:

- Donor governments, including both OECD Development Assistance Committee (DAC) countries and non-OECD countries.
- Multi-lateral development banks, such as the World Bank Group, ADB, IADB, and EBRD.
- National development banks such as the German development bank, KFW.
- Climate finance funds International institutions, such as the United Nations and European Union.
- National development agencies (e.g. GIZ, JICA, CIDA, DFID)
- Multi-lateral agencies (e.g. UNEP, UNDP, WHO)
- Local, regional and international non-governmental organisations (NGO)
- National recipient governments
- Local government
- Philanthropic organisations (e.g. the Bill and Melinda Gates Foundation).
- Commercial banks and investment funds
- Private sector including those involved in the delivery of development finance (e.g. contractors), those working alongside development agencies in recipient countries, and private sector investors.

[1] Development co-operation is also often termed 'development assistance' or 'international co-operation'. For the pur poses of this report, we have used the term 'development co-operation' to refer to this overall area of interest. The term 'development finance' is also used in this report and refers to the actual transfer of financial or in-kind support by 'donor' countries or development banks to 'recipient' countries.

Since the year 2000, development co-operation activities have been framed by the Millennium Development Goals, a set of eight goals and related targets and indicators aimed at reducing poverty and improving conditions for the world's poorest people by a target date of 2015 (see **Box 1**).

These goals have served to galvanise international co-operation, mobilise development finance and build momentum in addressing poverty, allowing significant progress to be made in achieving these targets.

### Box 1: The Millennium Development Goals (MDG)

1. Eradicate extreme poverty and hunger
2. Achieve universal primary education
3. Promote gender equality and empower women
4. Reduce child mortality
5. Improve maternal health
6. Combat HIV/AIDS, malaria and other diseases
7. Ensure environmental sustainability
8. Global partnership for development

Over recent years, the focus of attention has turned to what will replace these development goals after 2015. Much of the debate centres on the aim of eliminating extreme poverty by 2030 and the importance of ensuring that sustainability is embedded in a set of Sustainable Development Goals (United Nations, 2010; UNEP, 2013).

Appreciating this broader context is critical to understanding how development co-operation activities and the flows of development finance are likely to change over the coming years. As the priorities adjust and the delivery mechanisms change, the nature of development co-operation is likely to alter significantly.

Overall, development finance has steadily increased over the last decade (see **Figure 3**) and is expected to remain important, but the way in which it is sourced and delivered is expected to change. A number of key factors and trends are common in the debate on this issue:

- **The levels of development finance provided by non-OECD countries (e.g. donor nations in the Middle East and emerging economies such as India, Brazil and China) is expected to continue to increase,** requiring increased levels of partnership amongst the international community to avoid duplication and project failures. This trend runs counter to the efforts over recent years to simplify development finance delivery channels so as to reduce the administrative burden on recipient nations (historically, some development finance projects have failed due to the limits of local capacity to absorb and disperse development finance). Effective partnerships will be essential to ensure that support is delivered effectively and efficiently (Faure et al., 2013).

- **The number of recipients of traditional development finance is likely to reduce as more countries reach middle income status.** This will means that the nature of assistance provided to many countries is likely to change (Solheim, 2013). Generally, middle income countries have access to greater levels of domestic resources and also better credit-ratings than lower income countries, allowing access to capital from commercial markets. These factors may mean that the assistance provided to these countries changes from grant funding to more concessional and commercial lending. Hence, the focus of development assistance for middle income countries may well move towards improving the capacity of these countries to access finance and use it in ways that help meet development goals. The World Bank's *City Creditworthiness Academy* (World Bank, 2014b) is an example of how the international community is already adapting its approach.

**We can expect to see increased blending of finance and support from development finance donors, development banks, commercial banks, philanthropic sources and the wider private sector**. In particular, we can expect to see the private sector playing a growing role, both in the form of private investment and through philanthropic organisations, such as the Bill and Melinda Gates Foundation (Solheim, 2013; Development Initiatives, 2013).

For stakeholders involved in SWM-focused development co-operation, partnership and the ability to access and facilitate finance from a range of different sources – including private sector, philanthropic sources and also climate finance - will be critical. **Section 3** goes on to consider development finance in the SWM sector specifically.


**Figure 3:** Total development finance from all donors (2003-12)

Notes: Data on grants and concessionary loans [2] and other official flows [3] obtained from OECD (2014).

[2] The OECD defines grants and concessionary loans as finance which is a) is administered with the promotion of the economic development and welfare of developing countries as its main objective; and b) is concessional in character and conveys a grant element of at least 25 per cent (calculated at a rate of discount of 10 per cent). The term 'aid' is commonly considered to refer to the combination of grants and concessional loans, also termed 'official development assistance' (ODA) by OECD.

[3] The OECD defines 'other official flows' as finance from official sources which does not formally meet the conditions for eligibility as official development assistance (i.e. grants and concessionary loans), either because it is not primarily aimed at development, or because it has a grant element of less than 25 per cent. We have included this in the analysis presented in this report because the OECD considers that it is a key element of the overall package of development-focused finance and, based on analysis for this study, this seems to hold true for SWM-focused development finance. By way of example, all of the EBRD's SWM-focused finance is actually 'other official flows' rather than concessionary according to the definition set out by the OECD. The term 'development finance' has been used to cover these three elements (grants, concessional loans and other official flows).

# 4 Development co-operation in SWM

## 4.1 Introduction

Efforts to improve SWM in low and middle income countries often encounter significant challenges incluing:

- Limited access to capital and a lack of sustained revenue streams.
- Poor or inappropriate governance and institutional structures.
- Limited local capacity and skills.
- Complexities associated with engaging the informal and/or private sectors.

Unsuitability of high income country technologies and approaches to low and middle income country contexts.

Development co-operation plays a key role in helping to address and over-come these challenges, both in terms of providing capital, either as grants or concessional loans, and by delivering technical support to help address the capacity, institutional and technical issues associated with SWM.

However, in order to properly consider the historic and potential future role of development co-operation in the SWM sector, we need to understand in more quantitative terms the scale and nature of development finance focused on SWM issues.

The following sections provide a discussion of the level of development finance focused on SWM-issues and the key themes and issues associated with SWM development co-operation projects. The information presented is based on analysis of the data obtained from the OECD's Creditor Reporting System, the largest international source of data on development co-operation activities, and supplemented by sources from literature and discussions held with stakeholders in the field. See **Appendix A** for more detail on the OECD dataset and the methodology used to identify, extract and analyse SWM-sector focused development finance.

# 4.2 The scale of SWM development finance

In the ten years up to 2012, over $4 billion of development finance is estimated to have been committed to SWM projects. This comprises hundreds of millions of dollars of support each year in the form of direct technical support, numerous small grants and a handful of large concessional and non-concessional loans issued by development banks for major infrastructure development. **Table 2** shows the break-down of SWM development finance by type, illustrating the relatively even split in the level of finance between grants, concessionary loans and other official flows.

**Table 2:** Break-down of SWM development finance (2012)

| Development finance type | Number | Total Value |
|---|---|---|
| Concessionary loans | 31 | $200M (39%) |
| Other official flows | 17 | $144M (28%) |
| Grants | 636 | $166M (33%) |
| **GRAND TOTAL** | **684** | **$510M** |

Total levels of SWM development finance have increased markedly since 2003 (see **Figure 4**). This trend is in line with changes in total levels of development finance (see **Figure 3** in **Section 2** ). This reflects the activities of major donors who are active in the SWM sector.

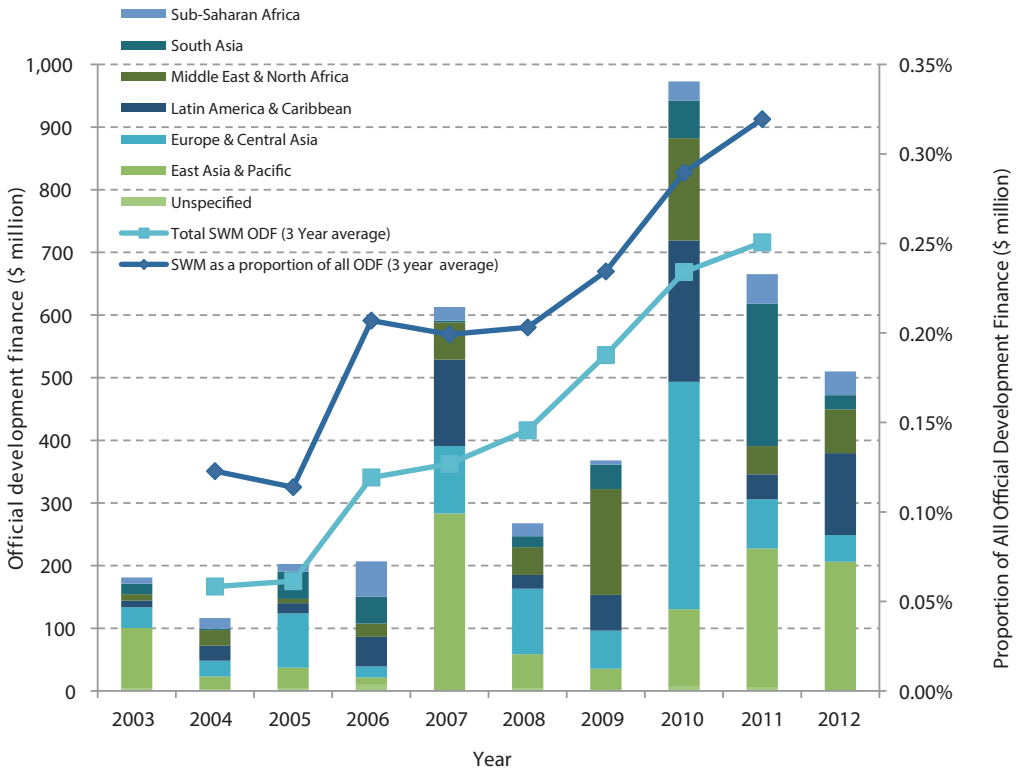


**Figure 4:** SWM development finance by region (2003-12)
Notes: This data is based on an analysis of development finance data from the OECD (2014). The graph illustrates the level of development finance committed to each region and also shows the 3 year average of SWM - development finance and the 3 year average of SWM development finance as a proportion of all development finance.

The World Bank, for example, committed to 10 SWM-focused projects in 2003 whereas in 2012 it committed to 24. The Bank's financial commitments to SWM were over $200 million higher in 2012 than in 2003 (Vergara and Banna, 2013).

Overall however, support for SWM comprises a small proportion of development finance. Over ten years up to 2012, SWM development finance as a proportion of all development finance has risen from a three year average of 0.12% to 0.32%.

Considered in terms of the population of the countries receiving SWM development finance, this equates to $0.09 of SWM development finance per capita, which compares with $31 per capita for all development finance and $2.43 per capita in the water and sanitation sector. **Table 5** illustrates the break-down of total development finance by sector.

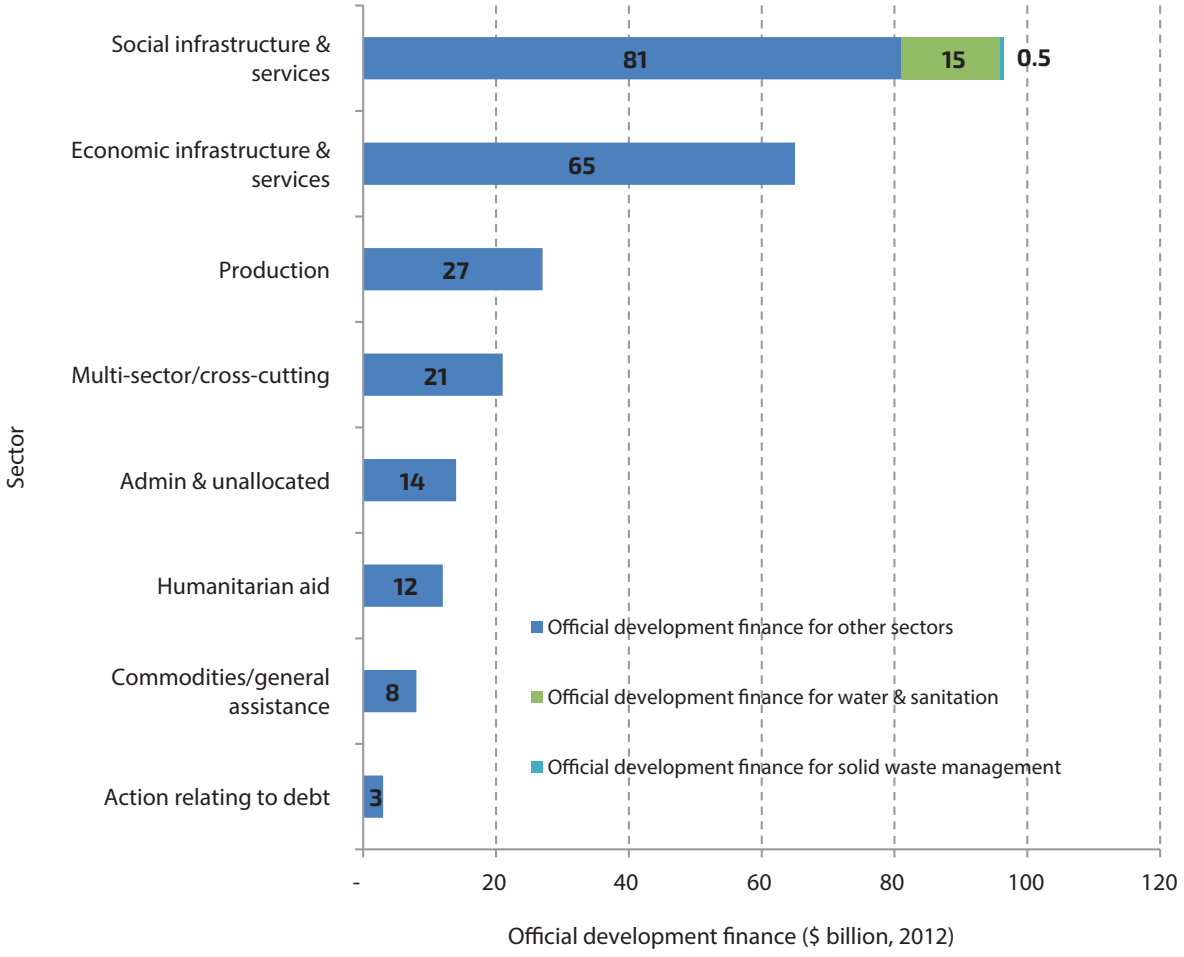


**Figure 5:** Total development finance by sector (2012)

Notes: Data on official development finance (ODF) by sector obtained from OECD (2014). ODF for water and sanitation falls within 'social infrastructure and services'. ODF for solid waste management falls mainly within ODF allocated to 'water and sanitation'.

# 4.3 Types of development co-operation in SWM

Approaches to development co-operation in SWM have evolved markedly over the last thirty years. In the 1980s, development co-operation in SWM was characterised by the transfer of technology from developed to developing economies (Wilson, 2007; Pfaff-Simoniet, 2010). However, following the failure of a number of high profile SWM projects, there was a general move amongst the major donors active in SWM in the early 2000s to an approach focused on increasing local capacity and skills. The systems-based approach of Integrated Sustainable Waste Management (ISWM) has become increasingly established in development co-operation, an approach that seeks to ensure that both the physical and governance issues of SWM are addressed in a holistic way.

It is also important to note in this context that, whilst the majority of SWM related development co-operation projects are entirely focused on waste management issues, SWM often forms part of much wider development co-operation initiatives (e.g. municipal infrastructure or water and sanitation-focused projects). In 2012, 85% or $435M of SWM development finance was entirely focused upon SWM with the remaining 15% ($75M) being part of much larger, cross-sector projects. This is particularly common for large concessional loan facilities which often have a regional or cross-sector focus. The IBRD-led Pacific Region Infrastructure Facility (PRIF) is an example of the type of project which includes SWM amongst its many objectives that cover water, health and other municipal infrastructure issues.

SWM development co-operation as it now stands includes a diverse range of activities, projects and initiatives. These can be broadly conceptualised into the following five types:

- Infrastructure development
- Technical support
- Capacity building
- Supply of equipment
- Emergency assistance

As illustrated in **Table 3,** many development co-operation projects are a combination of these different elements.

An estimate of the distribution of these types of projects in SWM development co-operation (based on analysis of OECD data) is presented in **Table 3**. Each type is discussed in greater detail in the following sections.

**Table 3:** Analysis of project types in SWM development co-operation (grants only: 2003-2012)

| Type | Number of projects | Proportion |
|---|---|---|
| Capacity building only | 56 | 34% |
| Capacity building with technical support | 5 | 3% |
| Capacity building with equipment supply | 2 | 1% |
| Capacity building with infrastructure development | 2 | 1% |
| Capacity building with infrastructure development and equipment supply | 2 | 1% |
| Capacity building with Infrastructure with technical support | 1 | 1% |
| Technical support only | 42 | 25% |
| Technical support with infrastructure development | 8 | 5% |
| Infrastructure development only | 29 | 18% |
| Equipment supply only | 12 | 7% |
| Emergency assistance | 6 | 4% |
| **TOTAL** | **165** | **100%** |

Note 1: The table is based on a review of all grant-funded projects for which details indicating type were available (165 in total). Source: OECD (2014).

### 4.3.1 Infrastructure development

The activities of many of the development banks, donors and agencies in the field of SWM development co-operation are focused on helping recipient countries improve waste management infrastructure. These tend to be major, multi-million dollar projects, normally led by development banks, and often combined with wider capacity building and technical assistance elements.

Due to the extent of uncontrolled dumping in low and middle income countries (Hoornweg and Bhada-Tata, 2012; Scheinberg et al., 2010) the focus of these infrastructure projects is generally on developing basic waste collection and transfer services and/or sanitary landfill capacity.

Concessional and non-concessional lending on SWM issues is almost exclusively aimed at infrastructure development, whereas only a minor proportion of grant funding tends to be used to support infrastructure development directly. As a result, the majority of official development finance supports infrastructure development. It is estimated that over two thirds of development co-operation funding in SWM was committed to infrastructure in 2012.

### 4.3.2 Technical support

Infrastructure development projects are often accompanied by wider technical support in the form of project feasibility studies and on-going technical assistance and project management support. In some cases, national donors will work with development banks to support these activities through grant funding or by providing the technical support element in the form of in-kind technical assistance. The development banks themselves may also fund these wider activities through grant funding and direct procurement of technical consultancy support (see **Box 2** for an example). The review of projects summarized in **Table 3** indicates that something of the order of 30% of grant-funded projects are aimed at providing technical support.

**Box 2: Case study – SWM Development Co-operation by IBRD and KFW in Morocco**

In 2009, the International Bank for Reconstruction and Development (IBRD, part of World Bank Group) committed a loan of $133 million to Morocco to assist the country in the improving its waste management systems. The loan, which was followed by second $139 million tranche of lending in 2010, allowed the country to make a step change in its approach to managing waste. The World Bank worked closely with the German development bank KFW and the development agency, GIZ, who provided technical support in parallel.

Prior to this development co-operation, approximately 30% of municipal solid waste (MSW) in Morocco went uncollected and the majority of waste was disposed in an uncontrolled and environmentally damaging way.

The assistance has allowed the Moroccan government to: improve its national waste policies, significantly increase the financial support it provides to municipalities, provide training and implement an initiative to promote the inclusion of informal sector recyclers. The assistance has also helped facilitate a carbon finance scheme, allowing Morocco to access additional financial resources.
Since 2009, it is estimated that Morocco has improved the controlled disposal of MSW from 10% to 30%, increased private sector involvement in providing waste collection services from 15% to 60%, and trained more than 1,600 local managers.

**Source**: World Bank (2014a)

### 4.3.3 Capacity building

Capacity building is widely recognized and documented as a key element of development co-operation activity in SWM. This is best exemplified by the comprehensive documents developed on this issue by the development agencies of the two most active national donors of SWM-focused development finance: Germany and Japan (Coad, 2010; JICA, 2005).

The development co-operation project failures of the 1980s and early 1990s are considered by many commentators to have resulted, in part, from a lack of local capacity and skills to deliver, manage and maintain the SWM infrastructure funded by development banks and donors. Appropriate capacity, skills and institutional structures are essential to allow successful projects to be developed and delivered in a

sustainable way, and to allow development co-operation funding to be absorbed and dispersed effectively. This approach also ensures that local partners are able to play a central role in SWM improvements and ensure 'ownership' of the project as it is designed and delivered.

Capacity building is a broad term which, in this context, is considered to include the following potential elements:

- **Research and development co-operation,** often via partnership between academic institutions in donor and recipient countries. Research activity in this context is often focused on developing appropriate applications and technologies for treating particular waste types (e.g. residues from coffee production in the case of one project in Brazil grant funded by Germany in 2012).

**Box 3: Case study – SWM development co-operation in Sierra Leone**

In 2007, supported by some initial funding from the UK's Department For International Development (DFID), officers from Warwickshire Council in the UK provided some initial technical support on solid waste management issues to the city of Bo in Sierra Leone.

Encouraged the success of this initial technical support project, council officers and officials successfully sought further funding from the United Nations Development Programme (UNDP). Between 2008 and 2011, the UNDP grant funded approximately $365,000 of technical support to improve waste management in the cities of Bo and Maken in Sierra Leone. The funding helped provide technical support to investigate ways to improve waste management systems in the cities. At the national level, the World Health Organisation (WHO) also funded the development of a national waste strategy for Sierra Leone.

UNDP's involvement has since been followed up by further grant funding and assistance from the UK's Department for International Development (DFID). DFID established a $8M Water, Sanitation and Health (WASH) challenge fund in Sierra Leone. This has funded 36 projects including 2 focused on SWM in Bo and Makeni. DIFD has also funded a Waste to Wealth programme, which is assisting small recycling businesses in Sierra Leone (Living Earth Foundation, 2014).

DFID has since committed a further $5M to improve waste infrastructure in Bo, a project which will be delivered by a local NGO, Welt Hungerhilfe.

Overall, the support has helped provide technical assistance, purchase refuse collection vehicles and bins, provide training to young people, support to small business and fund major infrastructure development.

**Sources:** Fleet (2014), and Tillet (2013)

- **Training of recipient country personnel.** Often this will comprise a programme of training events, work-shadowing, study tours, exchange programmes, the development of training and information materials, and 'train-the-trainer' approaches whereby recipient country staff are trained to provide on-going training and capacity building themselves.

- **Governance and institutional strengthening.** Support to identify and implement improvements in the institutions and governance arrangements associated with SWM. This is often linked to improvements in the processes associated with revenue generation and cost recovery (e.g. the development of tariff schemes and taxation systems).

As highlighted above, capacity building often forms a key part of wider infrastructure projects led by development banks. However, it is common, particularly amongst national donors, for capacity building to be the entire focus of a development co-operation project. The review of data present in **Table 3** indicates that around 40% of grant funded-projects (i.e. excluding loan projects) are focused on some form of capacity building.

### 4.3.4 Equipment supply

Despite the general move by many of the key donors and development banks away from a technology transfer approach, the use of grant funding by na-

tional donors to provide equipment and plant to recipient countries is still relatively common. An estimated 9% of projects in 2012 included the purchase of equipment and plant (typically refuse collection vehicles but also containers) for use in recipient countries. The case studies presented in **Box 3** and **Box 4** both included the purchase of vehicles and bins for SWM.

### 4.3.5 Emergency assistance

Development finance is critical in providing assistance in the aftermath of a natural disaster or conflict. This might be support in the form of equipment and resources to help manage waste arising from a natural disaster or could be the need for support to address SWM issues that become a critical human health issue in refugee camps.

The role of SWM support in a post conflict setting is also worth noting in this context. Iraq and Afghanistan, in particular, have received significant levels of SWM-related development co-operation support following the conflicts in these countries (see **Box 4**).

**Box 4: Case study – Conflict-related SWM Development Co-operation in Afghanistan**

The Regional Afghan Municipal Program for Urban Populations (RAMP-UP) was a development co-operation initiative funded by a range of donors, including USAID and AusAID, who provided $2 million of support in 2011/12.

The project aimed to improve delivery of municipal services, build local capacity and establish formal systems for revenue generation and collection. SWM was a key focus of the project which included the construction of a landfill facility and the purchase of refuse collection vehicles.

**Sources:** McCarthy (2013), and OECD (2014)

# 4.4 Waste streams addressed by development co-operation in SWM

The dominant focus of development co-operation in SWM is on municipal solid waste management (MSW). This links with the overarching objective of development co-operation activities in tackling poverty which, in the context of waste management, is closely associated with inadequate disposal of refuse in urban areas (particularly urban slums), and informal sector recycling activities.

The majority of infrastructure-related projects are focused specifically upon providing capacity for managing MSW, with projects in urban areas receiving particular attention according to OECD data.

However, it is important to recognise that development co-operation also plays a role in improving the management of a range other waste types including:

- **Healthcare waste** receives a particularly strong focus given the level of risk associated with managing this waste stream. 10% of SWM development co-operation projects in 2012 were focused on healthcare waste.
- **eWaste** has been the subject of considerable development co-operation activity and can be expected to continue to be so given: the increasing levels of waste electrical and electronic equipment being generated globally; concerns surrounding illegal shipment of eWaste from developed to developing countries; and the health and environmental risks caused by the burning of these wastes to liberate precious metals. The German development agency GIZ, for example, has been providing development co-operation assistance to India on eWaste issues for a number of years.
- **Hazardous waste** was the specific target of 14% of SWM development co-operation projects in 2012.
- **Agricultural waste** was identified as the theme of 11% of projects in 2012, often as part of a biogas scheme or biomass-based waste to energy project.
- **Radioactive waste** was the subject of 5% of committed projects in 2012.
- **Industrial waste** was the subject of 4% of committed projects in 2012.

**Figure 6** summarises the estimated split between different waste types in the development co-operation activities of 2012.

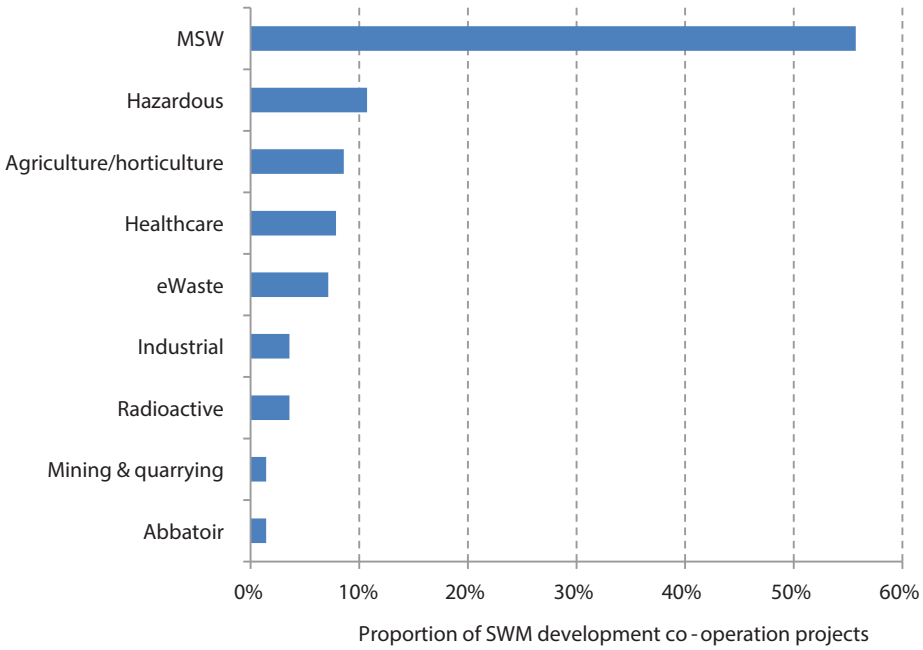


**Figure 6:** Summary of waste streams which are the subject of SWM development co-operation projects (2012)
Note 1: This data is based on a review of 140 SWM projects for which details of waste type were available (OECD, 2014).

# 4.5 Themes of development co-operation in SWM

The themes that are common elements of SWM development finance are informal sector issues, private sector involvement, climate change, financial reform and revenue collection issues, as well as a range of other common themes. Each is discussed below.

## 4.5.1 The Informal sector

Informal sector-related activity is a central element of development co-operation in SWM. The role that informal sector recyclers play in SWM is well documented (Wilson et al., 2006; Gunsilius et al.; 2011; Binion and Gutberlet, 2012; Velis et al., 2012; Lange and Linzer, 2013; Wilson et al., 2013). The German development agency GIZ (Gunsilius et al., 2011a), and WEIGO (Scheinberg, 2012) have produced comprehensive reviews and guidance on the issue.

Many SWM development co-operation projects recorded by the OECD refer to the informal sector being a key focus, either through better training and empowerment or as an element of a wider service and infrastructure project where it is recognized that the informal sector will need to be carefully and sensitively involved in the redesign and development of new systems.

The role of the informal sector in SWM also relates closely to gender issues which are a key issue in wider development co-operation activity, with the empowerment of women in developing countries often being a central objective of development co-operation efforts. This is also true of SWM development co-operation, with the involvement of women in waste collection often being an explicit objective of many development finance-funded SWM projects and relates to the fact that many informal waste recyclers are often women and children. Gender issues were an element of about 10% of identified SWM projects in 2012 with an estimated total value of about $80M (OECD, 2014).

## 4.5.2 Private sector involvement

Private sector engagement issues are a common element of development co-operation in SWM. 12% of projects recorded by OECD in 2012 involved an explicit private sector-related element or objective. These projects typically aimed at involving the private sector in the delivery of SWM services and infrastructure, often through public-private-partnership (PPP) approaches. Through their lending activities, development banks will also often seek to facilitate private sector investment.

As documented by the World Bank's work in this area, involvement of the private sector in the delivery of SWM services in low and middle income countries has potential benefits, including access to capital investment, specialist expertise and the effects of increased competition driving efficiencies (IFC, 2013).

The issue of private sector involvement links closely with the role that the informal sector plays in SWM in low and middle income countries . As identified and discussed by, for example, GIZ in its guidance on this issue (Soos, 2013), the involvement of the private sector in SWM must be undertaken with sensitivity to existing informal sector recycling operations. Experiences in Cairo in the 1990s are perhaps one of the more high profile examples where private sector engagement and existing informal sector recyclers ran into conflict (Zetter, 1997).

## 4.5.3 Climate change

The solid waste management sector accounts for a relatively small proportion of global greenhouse gas (GHG) emissions (UNFCCC, 2011). However, as a sector, it is the second largest emitter of methane gas. Conversely, it also has significant potential to off-set the generation of GHG emissions from other sectors (e.g. through the generation of renewable energy via landfill gas capture and biogas schemes and recycling of materials). As such, waste management is an important sector in terms of GHG mitigation opportunities. It is one of the most commonly represented sectors under the United Nations Framework Convention on Climate Change (UNFCCC) Clean Development Mechanism (mainly in the form of landfill gas capture projects) and has received considerable interest as a sector under the emerging Nationally Appropriate Mitigation Actions (NAMA) instrument. Over 25 waste sector projects are currently registered on the UNFCCC's NAMA registry, although it is important to note that these projects are at varying stages of development, with the majority still being at the concept stage.

The debate surrounding the development of NAMAs recognises the increasing importance of linking GHG mitigation with the delivery of development objectives (or so-called 'co-benefits'). SWM has a potentially strong role to play here in reducing GHG emissions whilst at the same time generating co-benefits in the form of health protection, job creation and environmental protection. Review of recorded SWM development co-operation projects seems to support this observation, with just over 10% of SWM development co-operation projects including climate change mitigation as a key objective.

Mechanisms for mobilising private finance are also important in this context. In 2009, the international community committed to mobilising $100 million of private sector finance to help mitigate GHG emissions. Linking action on development with climate change mitigation is likely to provider wider options for engaging the private sector and mobilising private finance to meet both goals. As highlighted above, climate change may well form a central element of any post-2015 development goals.

**Box 5** provides an example of a development co-operation project which aims to deliver GHG mitigation, achieve development goals and mobilise private sector finance by using climate finance as a catalyst.

**Box 5: Case study – Climate-change-related SWM development co-operation by CCAP**

The Canadian government provided funding to the Center for Clean Air Policy (CCAP) to support the development of a Nationally Appropriate Mitigation Action (NAMA) in the SWM sector in various Latin American countries to reduce methane and other greenhouse gas emissions from the waste sector. While the process varied across countries, actions included extensive stakeholder outreach, in-country technical workshops, data collection, scoping and pre-feasibility studies, and financial and policy analyses to support NAMA development.

The results of this development co-operation are two country-tailored NAMA designs which are currently seeking implementation financing in Colombia and Chile. In Colombia, the overall objective of the NAMA is to help develop waste treatment infrastructure by establishing a climate finance-based equity fund which will help overcome the lack of equity available for innovate waste infrastructure and which will leverage commercial lending for SWM projects. New waste infrastructure like mechanical-biological treatment plants can extract value from waste by producing commodities like recyclables, compost, and refuse derived fuel which can be sold. The NAMA will also address various regulatory and policy issues, and establishing an effective tariff structure for waste treatment.

In Chile, CCAP worked to design and develop an organic waste NAMA and assessed the economic and environmental viability of organics diversion projects that generate energy and compost through anaerobic digestion technologies and thus reduce methane and other GHG emissions from waste degradation and fossil fuels replacement.

**Source:** CCAP (2010)

### 4.5.4 Financial reform and revenue collection issues

The lack of a sustainable revenue stream for operating and maintaining SWM services is a significant challenge in low and middle income countries. Even if capital can be sourced from concessional loans or other sources, without a consistent stream of funding, SWM services and infrastructure cannot be maintained by local government.

Practitioners in the water and sanitation sector conceptualise the issue using the '3 Ts' model, which essentially considers revenue streams for services

in terms of 'transfers' (development finance), 'taxes' (from central or local taxation) and 'tariffs' (essentially direct users fees for services). This model has direct application to the SWM sector and, given that the costs of SWM services can be a significant proportion of local government budgets, it highlights the need to establish taxes and/or tariffs to cover the cost of SWM services and to eliminate reliance on transfers in the form of development finance.

In this context, establishing a 'willingness to pay' for SWM services amongst users is often a key priority action for the technical support that development banks provide alongside loans. More innovative approaches to establishing tariff schemes for SWM services are being tested in the sector. For example, the IFC has tested the approach of combining fees for SWM services with electricity charges for residents (International Finance Corporation, 2013).

### 4.5.5 Other themes

A number of other themes common to SWM development co-operation were identified during the analysis of OECD data including:

- **Job creation and entrepreneurship (3% of sampled projects).** This is a key driver for much development co-operation activity in a range of sectors and also appears as a stated objective for a number of SWM-focused development co-operation projects.

- **Technology transfer (4%).** Despite the general move away from approaches based on technology transfer, this issue is still evident in a number of projects.

- **Contaminated land and remediation (4%),** a theme that is commonly associated with SWM development co-operation, given the close link between inappropriate hazardous waste disposal and the need to provide environmental clean-up.

- **Integrated solid waste management (ISWM) (7%).** Perhaps surprisingly, the issue of ISWM is not particularly widespread in information available on SWM development co-operation projects. For example, it only featured in 7% of the sample of projects analysed in 2012 in OECD the dataset.

- **Education and awareness raising.** This is an issue which is considered to be important amongst practioners in SWM. Without successful engagement of service users, SWM systems are unlikely to be successful. However, this appears to be a theme that is not a central part of SWM development co-operation activities based on currently available information.

- **Circular economy, lifecycle and resource efficiency issues.** These concepts are the subject of lively debate and, to varying extent, established practice in high income countries. However, they receive little attention in a development co-operation context, albeit with limited exceptions. There are a small number of examples of development co-operation projects which are aimed at improving resource efficiency industry (although it's important to recognise that this may be associated with energy use as much as resource use) and extended producer responsibility does get a single mention as part of a 2012 IDB project in Chile associated with 'inclusive recycling'. The concept of the circular economy is also explicitly mentioned in a 2012 BMZ development co-operation project. As highlighted by a number of commentators on the issues, the absence of these concepts is not unexpected given the very different context of waste management in low and middle income countries.

# 4.6 Donors of SWM development finance

A total of 34 different donors committed financial support to SWM-related activities in 2012. Eight of these were multi-lateral institutions and the remaining 26 were national donors[4]. The largest six donors in 2012 were Germany ($126M), Asian Development Bank ($125M), Japan ($110M), the Inter-American Development Bank ($43M), the International Development Association ($23M) and the European Union ($20M).

These donors[5] accounted for almost 90% of SWM-focused official development finance in 2012, indicating that significant control over the influence of development co-operation in the SWM sector sits with a small number of countries and multi-lateral development banks.

The multi-lateral development banks provide assistance to a relatively small number of countries. Their support is typically provided through large single loans. By contrast, bilateral donors generally support a wide range of recipients, mainly with smaller grants, although Germany and Japan did allocate substantial loans for SWM issues in 2012.

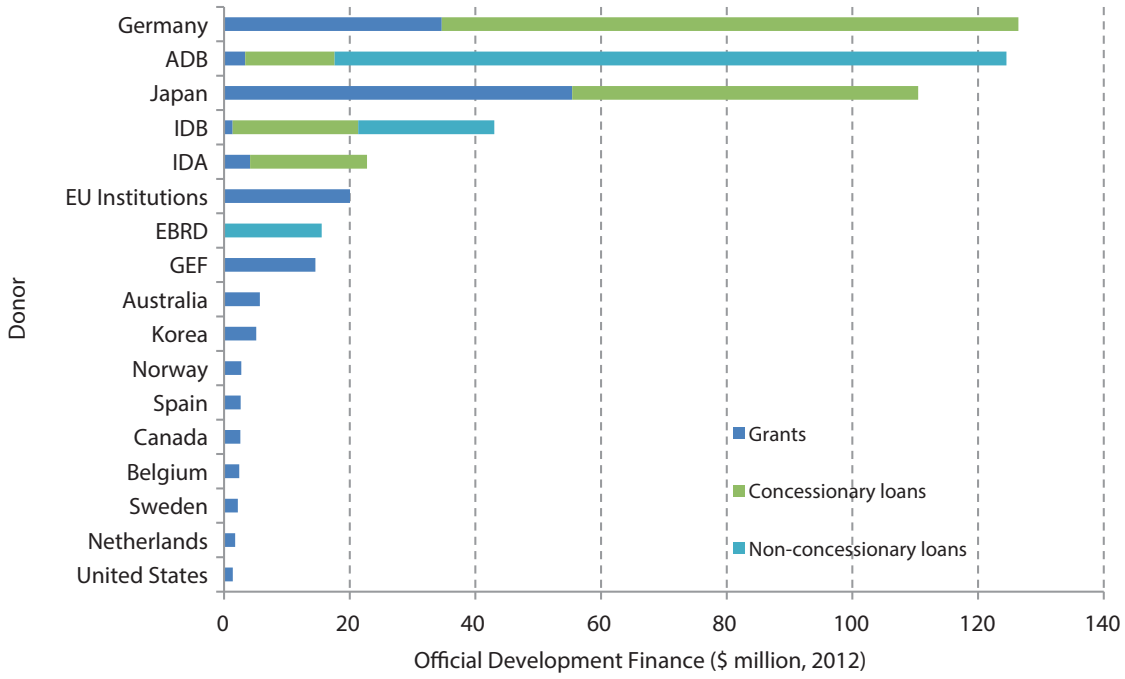


**Figure 7** illustrates the donors who committed over $1M to SWM-related development co-operation in 2012. A full list of donors together with their respective commitments to SWM can be found in **Appendix B**.
Notes: This data is based on an analysis of OECD development finance data (OECD, 2014).

[4] Note that we use the term 'donor' to include both bilateral and multi-lateral organisations and, as such, include organisations that provide loans as well as grants.

[5] See Appendix A for a more detailed discussion of the definition of official development finance and related issues.

# 4.7 Recipients of SWM development finance

OECD data indicates that donors committed SWM-related development finance to 148 recipient countries between 2003 and 2012. **Appendix C** provides a full list of recipients and the level of allocated official development finance.

**Table 4** presents a summary of the top ten recipients in receipt of loans and grants of over $4M between 2003 and 2012.

**Table 4:** Summary of top ten recipients of SWM-focused development finance ($M, 2003-2012)

| Donor | Grants | Concessional loans | Non-concessional loans | Grand Total |
|---|---|---|---|---|
| China | 30 | 261 | 249 | 540 |
| India | 5 | 105 | 194 | 303 |
| Morocco | - | - | 271 | 271 |
| Turkey | 64 | - | 183 | 247 |
| Azerbaijan | - | - | 221 | 221 |
| Vietnam | 19 | 182 | 12 | 213 |
| Venezuela | - | - | 140 | 140 |
| Ukraine | 58 | - | 39 | 96 |
| Tunisia | - | 72 | 22 | 94 |
| Argentina | - | - | 93 | 93 |

Notes: This data is based on an analysis of development finance data from the OECD (2014).

# 4.8 The distribution of SWM development finance

The distribution of SWM development finance has been considered by analysing the levels of development finance for low income, lower middle and upper income countries using data from the World Bank (see **Figure 8**). The data has been expressed in terms of development finance per capita to take into account the very large differences in the populations of the countries receiving development finance.

The **Figures 8**, **9** and **10** illustrate the distribution of ODF by GNI per capita, a useful, although not perfect, measure of a nation's poverty level. There is no apparent correlation between the amount of development finance received for SWM and GNI per capita. For example, Peru, an upper middle income country, received USD $1M in grants and $70M in loans in 2012. In contrast, the twenty low income countries receiving SWM-focused development finance in 2012 accounted for just $56M (see **Figure 9**).

In summary, in the ten years up to 2012, low income countries appear to have received significantly less assistance than middle income countries (MIC). The per capita values for SWM ODF are comparable although upper middle income countries receive a greater quantity of SWM-focused development finance per capita than low income countries ($0.12 per capita versus $0.09 per capita).

This difference may be because middle income countries are better able to access and absorb development finance and, as such, receive more. It is also important to remember that many of the world's poorest people actually live in middle income countries.

To consider whether this is an appropriate distribution of development finance or not would require a detailed comparison of development finance levels provided with the investment needs of different re-

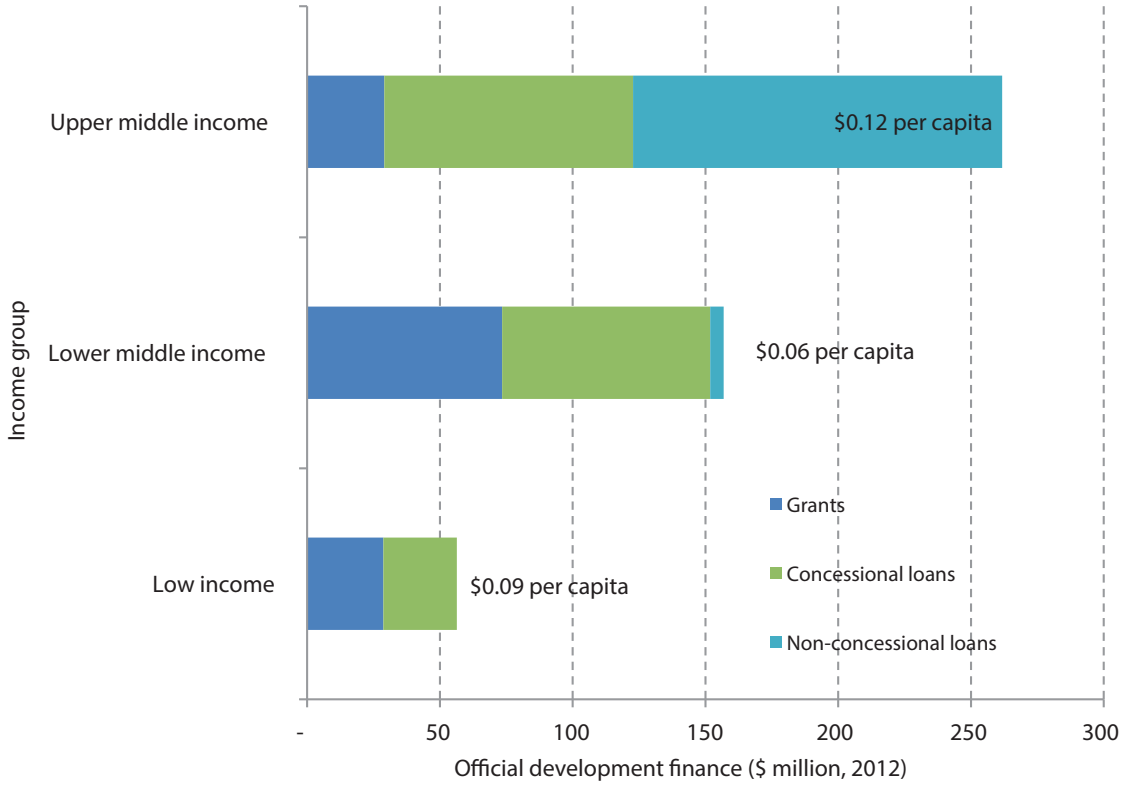


**Figure 8:** SWM official development finance received by income group of recipient (2012)
Notes: This data is based on an analysis of development finance data from the OECD (2014). Population and income group data sourced from the World Bank (2014c).

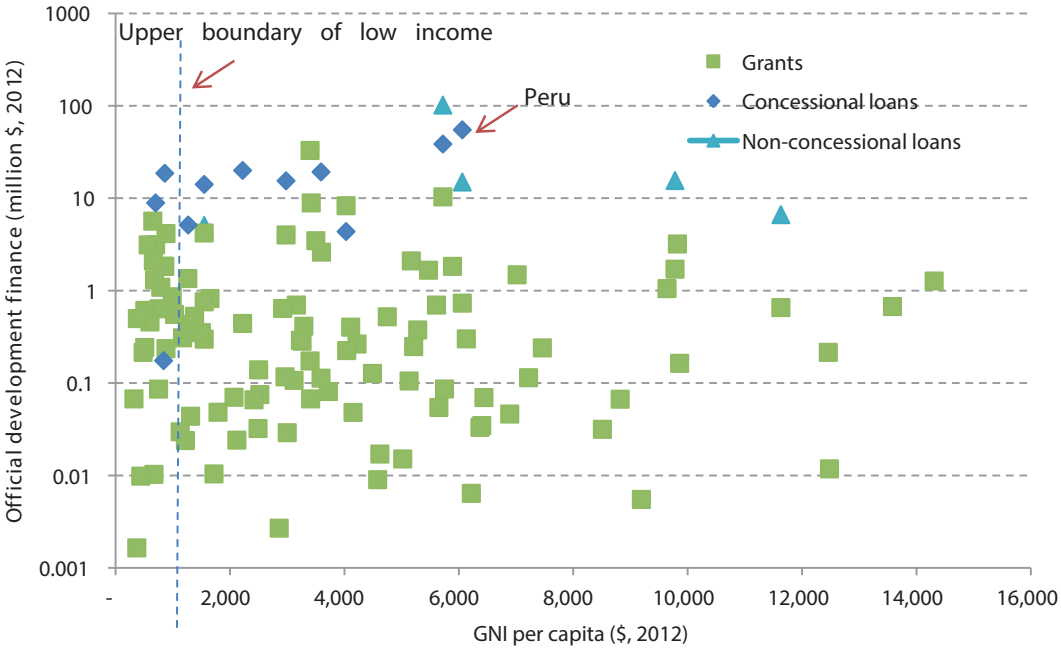


**Figure 9:** Distribution of total official development finance received by recipient countries (2012)
Notes: This data is based on an analysis of development finance data from the OECD (2014). Population and income group data sourced from the World Bank (2014c).

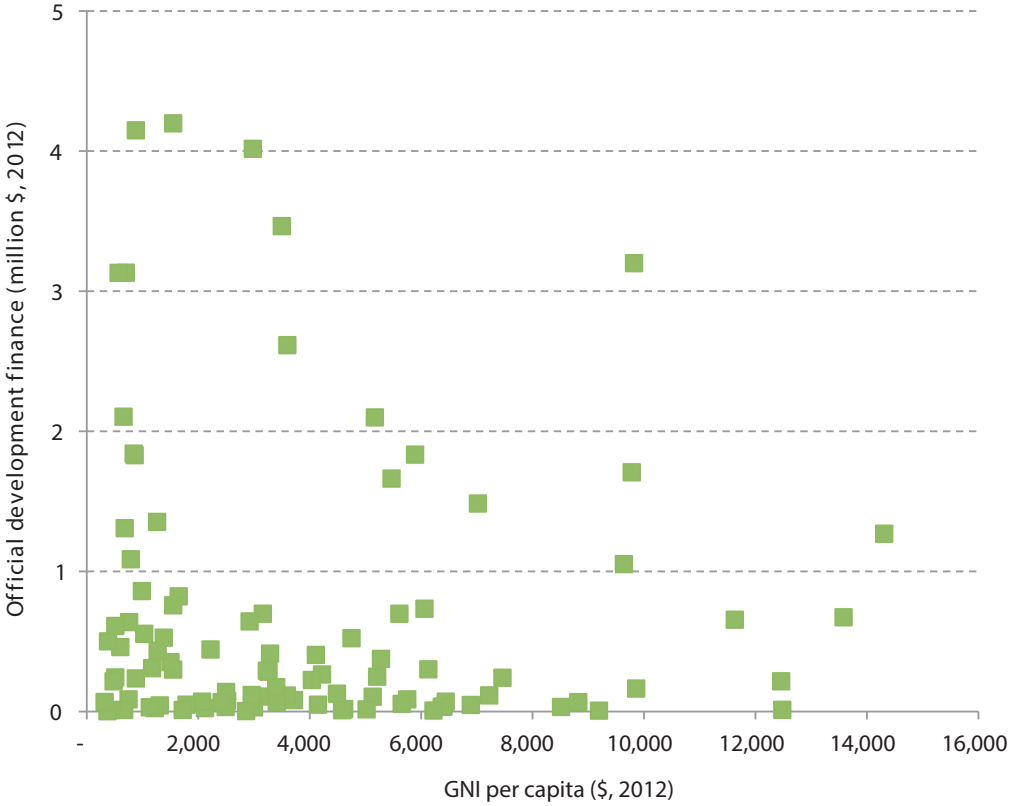


**Figure 10:** Distribution of total official development finance received by recipient countries (grants less than $5M only)

Notes: This data is based on an analysis of development finance data from the OECD (2014). Population and income group data sourced from the World Bank (2014c).

cipient countries. Unfortunately, the data to allow this comparison is not available. However, preliminary analysis has been undertaken using World Bank data on collection coverage for different countries to consider whether this provides any insight on the distribution of development finance, and to consider whether this type of analysis would be valuable in the future, should this data become available.

As illustrated in **Figure 11**, there does not appear to be any correlation between SWM performance, in terms of waste collection coverage and the level of SWM development finance received by a recipient country.

It is important to note that the data used to conduct this analysis is only partial and also relates to different reference years. As such, this analysis should be considered preliminary only. However, it does serve to test the potential to conduct this analysis in the future, perhaps as part of an ex-post assessment of the effectiveness of SWM development finance in a recipient country.

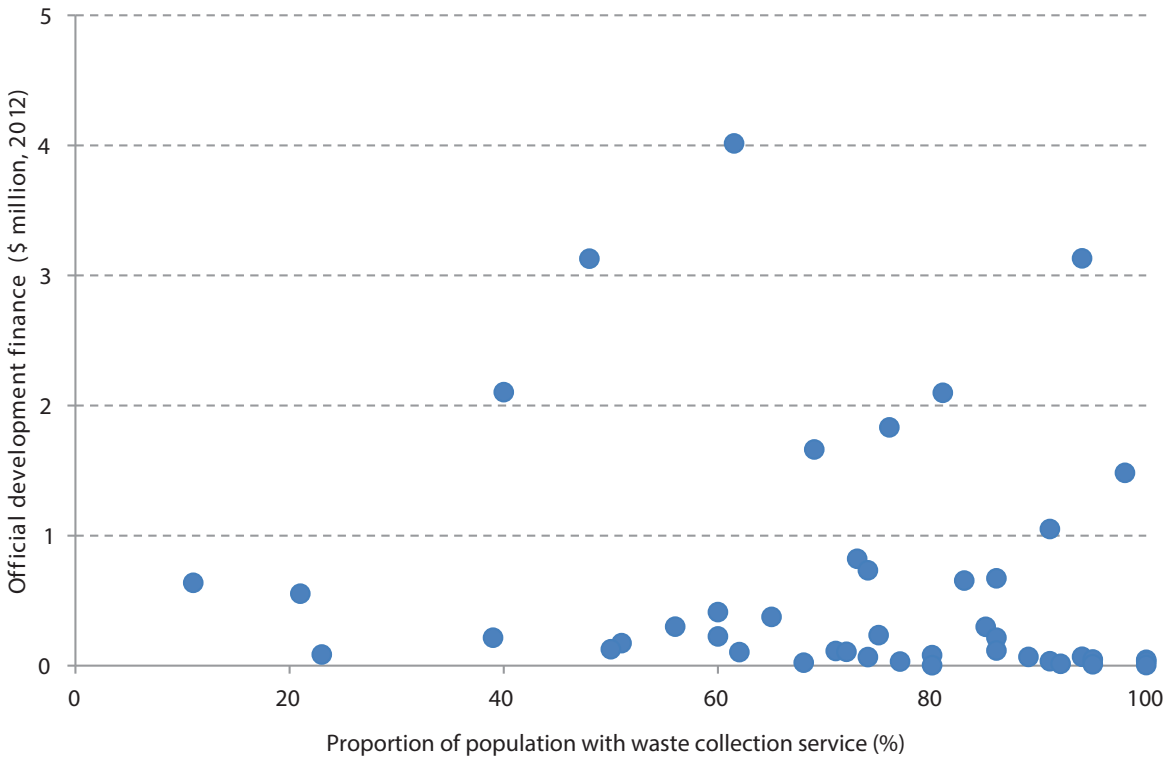


**Figure 11:** A comparison of SWM development finance and Waste Collection Coverage by country
Notes: This data is based on an analysis of development finance data from the OECD, 2014. Population and income group data sourced from the World Bank, 2014c. Waste collection coverage data from Hoornweg, D. and Bhada-Tata, P., 2012.

# 5 Conclusions and Recommendations

Development co-operation from national donors and from development banks has helped tackle some of the key challenges faced by low and middle income countries in improving SWM systems, helping to build local skills and capacity and develop effective institutions and systems of governance.

Concessional lending has provided access to capital in low and middle income countries and helped develop much needed SWM infrastructure, particularly collections systems and engineered landfill capacity. The activities of development banks have also helped engage the private sector in the delivery of SWM services and infrastructure.

Furthermore, these efforts have also been accompanied by increasing recognition of the role that informal sector recyclers play in municipal waste management systems. Sensitivity to the way in which the informal sector is integrated into developing SWM systems is now a core element of development co-operation in SWM.

SWM development finance has also played an important role in disaster-relief efforts, providing SWM systems for those most in need and assisting in the clean-up operations in areas hit by natural disasters.

However, there is still much to be done. As recent studies have identified, the quantities of solid waste generated in low and middle income countries is increasing rapidly, against a backdrop of inadequate collection systems, treatment and disposal infrastructure. There are also significant changes in the wider development co-operation landscape, with non-OECD countries (such as China and Brazil) becoming key development co-operations partners, and an increasing expectation that financial support provided to low and middle income countries will require the blending of finance from official sources (development finance) with philanthropic, commercial and private sector sources. Importantly, the replacement for the Millennium Development Goals, perhaps in the form of a new set of Sustainable Development Goals, will set the agenda in the post 2015 development.

Official development finance has the potential to continue to play a key role in helping communities in the poorer parts of the world develop the capacity, systems and infrastructure they need to manage waste, protecting human health and the environment, creating jobs and conserving resources. Development finance in the form of grants to build local skills and capacity, and concessional lending to provide much needed capital, will be an essential element of this activity.

In order for SWM development co-operation to be effective in the post 2015 world, a number of issues will be important:

**Good empirical data on SWM development co-operation issues is essential.** The availability of comprehensive data on SWM development co-operation activities and the needs of those in low and middle income countries is relatively limited. The OECD maintains the largest, comprehensive source on development finance spending, but there are concerns over the accuracy of the data when used at the sector specific level (see **Appendix A**).

Comprehensive information on the level of support and investment needed in low and middle income countries is also lacking. The World Bank indicates that waste management costs in low and middle income countries will increase significantly but this does not shed light on the level of infrastructure investment that will be needed.

Good empirical data and evidence is critical to ensure that development finance is delivered to those who need it most and to allow the robust assessment of its effectiveness.

**A better evidence base is needed to raise the profile of SWM and to illustrate how action on SWM issues can help meet development goals.**

Improvements in SWM have a key role to play in helping to meet development goals. Successful SWM initiatives stimulate investment, create jobs, generate environmental improvements and also have the potential to reduce greenhouse gas emissions, a factor that is likely to be central to any post 2015 development goals. However, SWM is not a 'primary' issue with a specific Millennium Development Goal (MDG), nor is it likely to have a specific Sustainable

Development Goal (SDG). But prioritising SWM does allow numbers of MDGs/ SDGs to be tackled in an integrated way. There is also potential for using SWM itself (i.e. a clean city) as a proxy-indicator for good governance. SWM needs to be recognised as a key element of international efforts to reduce poverty and environmental degradation.

A far better evidence base is needed to make this case and to support SWM-focused development co-operation activities. The evidence base needs to include information on the full economic costs and benefits of SWM in a developing world context, including external economic costs (e.g. health and environmental impacts), so as to provide the evidence base to donors and development banks for funding and supporting development co-operation in SWM.

**Increased access to capital finance will be needed to help deliver essential SWM infrastructure in low and middle income countries.**

Improved access to capital finance will be important to help central and local governments in low and middle countries develop capital intensive infrastructure for managing growing volumes of solid waste. This will need to include improving access to concessional loan funding but also using development finance to facilitate and leverage investment from private investors, and from philanthropic and climate finance sources. As highlighted in this report, the majority of development finance on SWM is provided to middle income countries. The reach of this development finance needs to be extended to the lowest income countries that need it most.

**The emphasis on building capacity building and good governance on SWM in low and middle income countries needs to be maintained.**

Capacity building efforts have been a key focus for development co-operation activities on SWM and much has been achieved on this front. However, this focus needs to be maintained to ensure that communities have the necessary institutions and skills to deliver sustainable, locally appropriate waste management systems.

**Partnerships between donors, philanthropic organisations, NGOs and, particularly, the private sector will be essential.**

As the nature of development finance changes and the blending of finance from different sources becomes more important, effective partnerships will be key. The SWM sector has a unique position and some excellent operator models for illustrating how the public sector, civil society and private sector can all be engaged effectively in delivering SWM services.

Overall, SWM development finance has the potential to play a central role in helping communities manage increasing levels of waste generation in a way which is sustainable and sensitive to local needs and constraints. Addressing this challenge will require good data, effective partnerships, continued capacity building efforts, and the delivery of development co-operation support to those who need it most.

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# Appendix A: Summary of data analysis methodology

## Data on development co-operation in SWM

### Sources of data on the scale and nature of development co-operation include:

1. The Creditor Reporting System (CRS) database maintained by the Organisation of Economic Co-operation and Development's (OECD) Development Assistance Committee (DAC)[1].

2. The International Development finance Transparency Initiative (IATI)[2]. The objective of this initiative is to promote a universal standard for publishing development finance data.

3. Information published or provided directly by multi-lateral development banks (MDB).

There are also several websites which take data from these sources and make it available for analysis and present it using different visualisation approaches, for example: the EU Development finance Explorer[3], Development Finance Flows[4] and AidData[5]. A review of published literature using Scopus and Web of Science did not identify any other sources of quantitative data on development co-operation activities in SWM.

Of these sources, the CRS is the only one which provides data at a resolution allowing development co-operation activities specifically in SWM to be identified and assessed.

## Methodology used to assess the level of development co-operation in SWM

The main source of data on official development assistance is the OECD's Creditor Reporting System (CRS), which has been used as the primary source for the analysis presented in this study. This database is generally recognized as the most authoritative source of data on development co-operation and is commonly used by organizations in the development sector to assess the types and level of official development finance.

All members the OECD's Development Assistance Committee report their Official Development Finance (ODF) commitments and disbursements to the DAC on an annual basis.

Official Development Finance (ODF) is a term defined by the OECD's Development Action Committee (DAC). It comprises two elements:

1. Official Development Assistance (ODA) which comprises grants and concessionary loans provided to recipient countries or multi-lateral agencies with the overall objective of promoting economic development and welfare. Concessionary loans are defined as those which comprise a grant element of at least 25%. Note that the grant element is calculated by comparing the interest rate for the loan with a commercial reference rate to determine the size of the concessionary component.

2. Other Official Flows (OOF) which represent the flows of finance and resources from official organisations but does not qualify as ODA because it is not primarily aimed at development or because the grant element is less than 25%.

[1] http://www.oecd.org/dac/
[2] http://www.development financetransparency.net/
[3] https://tr-development finance.jrc.ec.europa.eu/
[4] http://www.development financeflows.org/about/
[5] http://aiddata.org/

The data is collated, checked and published by the OECD. The data can be interrogated via the OECD's on-line database. Data is normally published approximately 1 year after the end of the year that it represents. For instance, the data for ODF in the year 2012 was published in January 2014.

Note that ODF does not include flows of development finance from private source and hence is only part of the overall picture of resource flows. However, ODF is the element which is most directly influenced and controlled by development-focused international co-operation activities. ODF also provides a means by which resources from private and commercial sources can be mobilised. So, in this sense, the nature and characteristics of ODF in the context of solid waste is key and warrants closer analysis.

The analysis presented in this paper considers 'commitments' made by donors rather than 'disbursements'. This is because commitments may take a number of years to disburse after they have been committed by a donor so, in effect, the commitment figures are considered more recent than the disbursement figures. However, it is important to recognise that figures for disbursements and commitments can be quite different, particularly when looking at finance flows thematically.

## Analysis Methodology

The analysis comprised several key steps:

1. Collation of OECD data for ODF commitments by all donors in years 2003 to 2012.

2. Interrogation of ODF project dataset to identify those that are either categorised as 'waste management/disposal' or include the term 'waste' in their title or supporting details. Over 4,000 individual projects were identified.

3. Review each identified project and its supporting information to assess the extent to which it relates to SWM. Based on the supporting information for each project, a percentage value, ranging from 5% to 100%, was then applied to each as an initial assessment of the proportion of the project which relates to SWM. This value was then used to calculate an adjusted monetary value for the project. By way of illustration, if a $20M project loan was considered to comprise a 10% SWM element its estimated monetary value is reduced to $2M.

4. More detailed review of projects with a value of over $1M using information from the detailed description and, where available, donor websites.

5. The resulting dataset was then manipulated to analyse the level of ODF according to various parameters included in the OECD database (e.g. donor, recipient, delivery agency, type of ODF, etc.).

6. Resulting data was also combined with data from other sources (see **Table 5**) to allow assessment of ODF against income group, GNI, waste collection coverage and recycling performance.

**Table 5:** Summary of additional datasets applied

| Data | Source |
|---|---|
| **Income group** (i.e. least developed country, other low income country, lower middle income, upper middle income) | OECD |
| **Gross national income per capita (USD)** | World Bank (Atlas method) |
| **Population** | UN Population Statistics |
| **Collection coverage** | World Bank |
| **Recycling Performance** | World Bank |

Each project was also classified using the supporting information available in the OECD dataset to identify the waste stream concerned, the project type and the project theme. The code frames applied are summarised in the table below (**Table 6**). Note that it was not possible to assign a waste stream, type or theme to every project because the OECD dataset was not sufficiently detailed in many cases.

**Table 6:** Summary of code frames used to analysis waste streams, project type and theme

| Element | Code frame |
|---|---|
| **Waste stream** | • MSW<br>• eWaste<br>• Industrial<br>• Hazardous waste<br>• Healthcare<br>• Agriculture, horticulture, forestry and aquiculture<br>• Construction & demolition<br>• Mining & quarrying<br>• Sewage sludge<br>• Radioactive |

**(cntd.) Table 6:** Summary of code frames used to analysis waste streams, project type and theme

| Element | Code frame |
|---|---|
| **Project type** | • Infrastructure<br>• Finance<br>• Desk or feasibility study<br>• Project preparation<br>• Privatisation/PPP or market development<br>• Commercialisation<br>• Training or capacity building<br>• Education or awareness raising<br>• Strategy or planning work<br>• Regulatory enforcement<br>• R&D or academic<br>• Equipment supply/commodities |
| **Theme** | • Waste to energy<br>• Technologies (unless specified as W2E)<br>• Incineration<br>• Recycling or materials recovery<br>• Waste Electrical and Electronic Equipment (WEEE)<br>• Packaging waste<br>• Renewable energy<br>• Food waste<br>• Organic waste<br>• Biomass<br>• Climate change (including Clean Development Mechanism (CDM) or Nationally Appropriate Mitigation Action (NAMA))<br>• Informal sector<br>• Natural disaster<br>• Conflict<br>• Refugees<br>• Urban<br>• Rural<br>• Collection<br>• Source separation<br>• Cleaner production or resource efficiency |

## Availability and accuracy of the OECD data

Analysis of the OECD's database indicates that the figures available for 'waste management/ disposal' activities are not entirely accurate.

A total of 2,861 projects are recorded within the 'waste management/disposal' subsector by OECD for the years 2003 to 2012. Only 2,701 of these (i.e. 94%) are associated with SWM.

A further 847 projects were identified in other subsectors (i.e. outside 'waste management/disposal') so were included within the analysis presented in this report.

It is also clear from analysis of the OECD database that the data on monetary flows does not accurately represent in the level of support devoted to SWM for a number of projects. Analysis of individual projects in the SWM indicates that 2,949 of the identified projects are entirely focused on SWM issues. The remaining 599 (17%) projects comprise wider support projects of which SWM is just one part.

# Appendix B: SWM development finance donors

**Table 7:** SWM development finance donors (million USD, 2012)

| Donor | Grants | Concessionary loans | Non-concessionary loans | Total |
|---|---|---|---|---|
| Germany | 34.6 | 91.8 | - | 126.4 |
| ADB | 3.4 | 14.2 | 106.9 | 124.5 |
| Japan | 55.4 | 55.1 | - | 110.5 |
| IDB | 1.4 | 20.0 | 21.7 | 43.0 |
| IDA | 4.1 | 18.6 | - | 22.7 |
| EU Institutions | 20.1 | - | - | 20.1 |
| EBRD | - | - | 15.5 | 15.5 |
| GEF | 14.5 | - | - | 14.5 |
| Australia | 5.7 | - | - | 5.7 |
| Korea | 5.1 | - | - | 5.1 |
| Norway | 2.8 | - | - | 2.8 |
| Spain | 2.6 | - | - | 2.6 |
| Canada | 2.6 | - | - | 2.6 |
| Belgium | 2.4 | - | - | 2.4 |
| Sweden | 2.2 | - | - | 2.2 |
| Netherlands | 1.8 | - | - | 1.8 |
| United States | 1.4 | - | - | 1.4 |
| Italy | 0.96 | - | - | 0.96 |
| Switzerland | 0.95 | - | - | 0.95 |
| Finland | 0.25 | - | - | 0.93[1] |
| Czech Republic | 0.72 | - | - | 0.72 |
| United Kingdom | 0.56 | - | - | 0.56 |
| UNDP | 0.56 | - | - | 0.56 |
| Luxembourg | 0.47 | - | - | 0.47 |
| France | 0.31 | - | - | 0.31 |
| Austria | 0.26 | - | - | 0.26 |
| BADEA | 0.10 | - | - | 0.10 |
| Portugal | 0.07 | - | - | 0.07 |
| Iceland | 0.07 | - | - | 0.07 |
| New Zealand | 0.05 | - | - | 0.05 |
| United Arab Emirates | 0.01 | - | - | 0.01 |
| Greece | 0.003 | - | - | 0.003 |
| **Grand Total** | **165** | **200** | **144** | **510** |

Source: OECD DAC Database (accessed May 2014).
Note 1: Finland also committed $680,000 in the form of equity.

# Appendix C: SWM development finance recipients

**Table 8:** SWM development finance (Million USD, 2012)

| Recipient | Grants | Concessional loans | Non-concession loans | Grand Total |
|---|---|---|---|---|
| China | 65 | 263 | 250 | 578 |
| India | 18 | 108 | 196 | 325[1] |
| Morocco | 3 | - | 271 | 275 |
| Turkey | 69 | 3 | 183 | 255 |
| Vietnam | 56 | 183 | 12 | 250 |
| Azerbaijan | 2 | - | 221 | 223 |
| Venezuela | 1 | - | 140 | 141 |
| Ukraine | 63 | - | 43 | 106 |
| Peru | 34 | 55 | 15 | 104 |
| Tunisia | 9 | 72 | 22 | 103 |
| Argentina | 6 | - | 93 | 99 |
| Brazil | 10 | - | 83 | 93 |
| Indonesia | 35 | 40 | - | 76[1] |
| Sri Lanka | 18 | 42 | - | 60 |
| West Bank & Gaza Strip | 59 | - | - | 59 |
| Bosnia-Herzegovina | 7 | 23 | 25 | 55 |
| Serbia | 50 | - | - | 50 |
| Kenya | 6 | 44 | - | 50 |
| Chile | 8 | 39 | - | 48 |
| Philippines | 19 | 25 | - | 45 |
| Belarus | 0 | - | 43 | 43 |
| Bangladesh | 28 | 13 | - | 42 |
| Albania | 29 | 12 | - | 41 |
| Colombia | 7 | - | 29 | 36 |
| Jordan | 8 | - | 25 | 33 |
| Senegal | 6 | 17 | 8 | 31 |
| Kazakhstan | 7 | - | 22 | 29 |
| Iraq | 29 | - | - | 29 |
| Nepal | 16 | 14 | - | 29 |
| El Salvador | 9 | 19 | - | 28 |
| Montenegro | 8 | 14 | 6 | 28 |
| Egypt | 12 | 15 | - | 27 |
| Bolivia | 4 | 20 | 1 | 26 |
| Guyana | 0 | 24 | 2 | 25 |

(cntd.) Table 8: SWM development finance (Million USD, 2012)

| Recipient | Grants | Concessional loans | Non-concession loans | Grand Total |
|---|---|---|---|---|
| Djibouti | 24 | 0 | - | 24 |
| Syria | 23 | - | - | 23 |
| Algeria | 22 | - | - | 22 |
| Ghana | 5 | 15 | - | 20 |
| Nigeria | 1 | 19 | - | 20 |
| Benin | 5 | 14 | - | 20 |
| Mongolia | 16 | - | - | 16 |
| Armenia | 16 | - | - | 16 |
| Dominican Republic | 10 | 6 | - | 16 |
| Costa Rica | 15 | - | 0 | 15 |
| Haiti | 14 | - | - | 14 |
| Mexico | 14 | - | - | 14 |
| Kosovo | 14 | - | - | 14 |
| Cuba | 13 | - | - | 13 |
| Tanzania | 4 | 8 | - | 12 |
| Maldives | 5 | 8 | - | 12 |
| Malaysia | 12 | - | - | 12 |
| Fiji | 10 | - | - | 10 |
| Croatia | 9 | - | - | 9 |
| Georgia | 2 | 0 | 6 | 8 |
| Zambia | 8 | - | - | 8 |
| Cape Verde | 8 | - | - | 8 |
| Cambodia | 8 | - | - | 8 |
| Tajikistan | 5 | - | 3 | 7 |
| Mozambique | 5 | 2 | - | 7 |
| Yemen | 7 | - | - | 7 |
| Lebanon | 7 | - | - | 7 |
| Ecuador | 7 | - | - | 7 |
| Mali | 7 | - | - | 7 |
| Zimbabwe | 6 | - | - | 6 |
| Kyrgyz Republic | 6 | 0 | - | 6 |
| Laos | 1 | 5 | - | 6 |
| Lesotho | 5 | 0 | - | 5 |
| Liberia | 1 | 4 | - | 5 |
| Central African Rep. | 4 | 1 | - | 5 |
| Nicaragua | 5 | - | - | 5 |

(cntd.) **Table 8:** SWM development finance (Million USD, 2012)

| Recipient | Grants | Concessional loans | Non-concession loans | Grand Total |
|---|---|---|---|---|
| Former Yugoslav Republic of Macedonia | 3 | - | 2 | 5 |
| South Sudan | 4 | - | - | 4 |
| Tonga | 4 | 0 | - | 4 |
| Uruguay | 4 | - | - | 4 |
| Angola | 0 | 4 | - | 4 |
| Seychelles | 4 | - | - | 4 |
| Kiribati | 4 | - | - | 4 |
| Thailand | 3 | - | - | 3 |
| Palau | 3 | - | - | 3 |
| Panama | 3 | - | 0 | 3 |
| Paraguay | 3 | - | - | 3 |
| Guatemala | 3 | - | - | 3 |
| Samoa | 3 | - | - | 3 |
| Pakistan | 3 | - | - | 3 |
| Ethiopia | 3 | - | - | 3 |
| States Ex-Yugoslavia | 3 | - | - | 3 |
| Sierra Leone | 0 | 2 | - | 2 |
| Uganda | 1 | 1 | - | 2 |
| Afghanistan | 2 | - | - | 2 |
| Guinea | 2 | 0 | - | 2 |
| South Africa | 2 | - | - | 2 |
| Jamaica | 0 | - | 2 | 2 |
| Cote d'Ivoire | 2 | - | - | 2 |
| Rwanda | 2 | - | - | 2 |
| St. Helena | 2 | - | - | 2 |
| Cameroon | 1 | - | - | 1 |
| Mauritania | 0 | 1 | - | 1 |
| Vanuatu | 1 | - | - | 1 |
| Moldova | 1 | 0 | - | 1 |
| Honduras | 1 | - | - | 1 |
| Somalia | 1 | - | - | 1 |
| Sao Tome & Principe | 1 | - | - | 1 |
| Micronesia, Fed. States | 1 | - | - | 1 |
| Gambia | 1 | 0 | - | 1 |
| Namibia | 1 | - | - | 1 |
| Marshall Islands | 1 | - | - | 1 |
| Sudan | 1 | - | - | 1 |
| Swaziland | 1 | - | - | 1 |
| Bhutan | 1 | - | - | 1 |

(cntd.) Table 8: SWM development finance (Million USD, 2012)

| Recipient | Grants | Concessional loans | Non-concession loans | Grand Total |
|---|---|---|---|---|
| Niue | 1 | - | - | 1 |
| Uzbekistan | 1 | - | - | 1 |
| Burkina Faso | 1 | - | - | 1 |
| St.Vincent & Grena-dines | 0.5 | - | - | 0.5 |
| Malawi | 0.4 | - | - | 0.4 |
| Cook Islands | 0.4 | - | - | 0.4 |
| Guinea-Bissau | 0.4 | - | - | 0.4 |
| Congo, Dem. Rep. | 0.4 | - | - | 0.4 |
| Chad | 0.3 | - | - | 0.3 |
| St. Lucia | 0.3 | - | - | 0.3 |
| Iran | 0.3 | - | - | 0.3 |
| Papua New Guinea | 0.3 | - | - | 0.3 |
| Belize | 0.2 | - | - | 0.2 |
| Myanmar | 0.2 | - | - | 0.2 |
| Niger | 0.2 | - | - | 0.2 |
| Solomon Islands | 0.2 | - | - | 0.2 |
| Gabon | 0.1 | - | - | 0.1 |
| Tuvalu | 0.1 | - | - | 0.1 |
| Togo | 0.1 | - | - | 0.1 |
| Tokelau | 0.1 | - | - | 0.1 |
| Antigua and Barbuda | 0.1 | - | - | 0.1 |
| Madagascar | 0.1 | - | - | 0.1 |
| Dominica | 0.1 | - | - | 0.1 |
| Timor-Leste | 0.1 | - | - | 0.1 |
| St. Kitts-Nevis | 0.1 | - | - | 0.1 |
| Grenada | 0.05 | - | - | 0.05 |
| Botswana | 0.04 | - | - | 0.04 |
| Korea, Dem. Rep. | 0.03 | - | - | 0.03 |
| Suriname | 0.03 | - | - | 0.03 |
| Barbados | 0.02 | - | - | 0.02 |
| Oman | 0.02 | - | - | 0.02 |
| Trinidad and Tobago | 0.02 | - | - | 0.02 |
| Saudi Arabia | 0.02 | - | - | 0.02 |
| Nauru | 0.02 | - | - | 0.02 |
| Turkmenistan | 0.01 | - | - | 0.01 |
| Anguilla | 0.01 | - | - | 0.01 |
| Burundi | 0.003 | - | - | 0.003 |
| Congo, Rep. | 0.002 | - | - | 0.002 |

Note 1: India and Indonesia also received $3M and $1M development finance in the form of equity, respectively.
Note 2: Regional ODF not included.

# ISWA

International Solid Waste Association

**The International Solid Waste Association (ISWA) is a global, independent and non-profit making association, working in the public interest to promote and develop sustainable waste management. ISWA has members in more than 60 countries and is the only worldwide association promoting sustainable, comprehensive and professional waste management.**

ISWA's objective is the worldwide exchange of information and experience on all aspects of waste management. The association promotes the adoption of acceptable systems of professional waste management through technological development and improvement of practices for the protection of human life, health and the environment as well as the conservation of materials and energy resources.

ISWA's vision is an Earth where no waste exists. Waste should be reused and reduced to a minimum, then collected, recycled and treated properly. Residual matter should be disposed of in a safely engineered way, ensuring a clean and healthy environment. All people on Earth should have the right to enjoy an environment with clean air, earth, seas and soils. To be able to achieve this, we need to work together.

For information about ISWA, visit our homepage at **www.iswa.org**

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