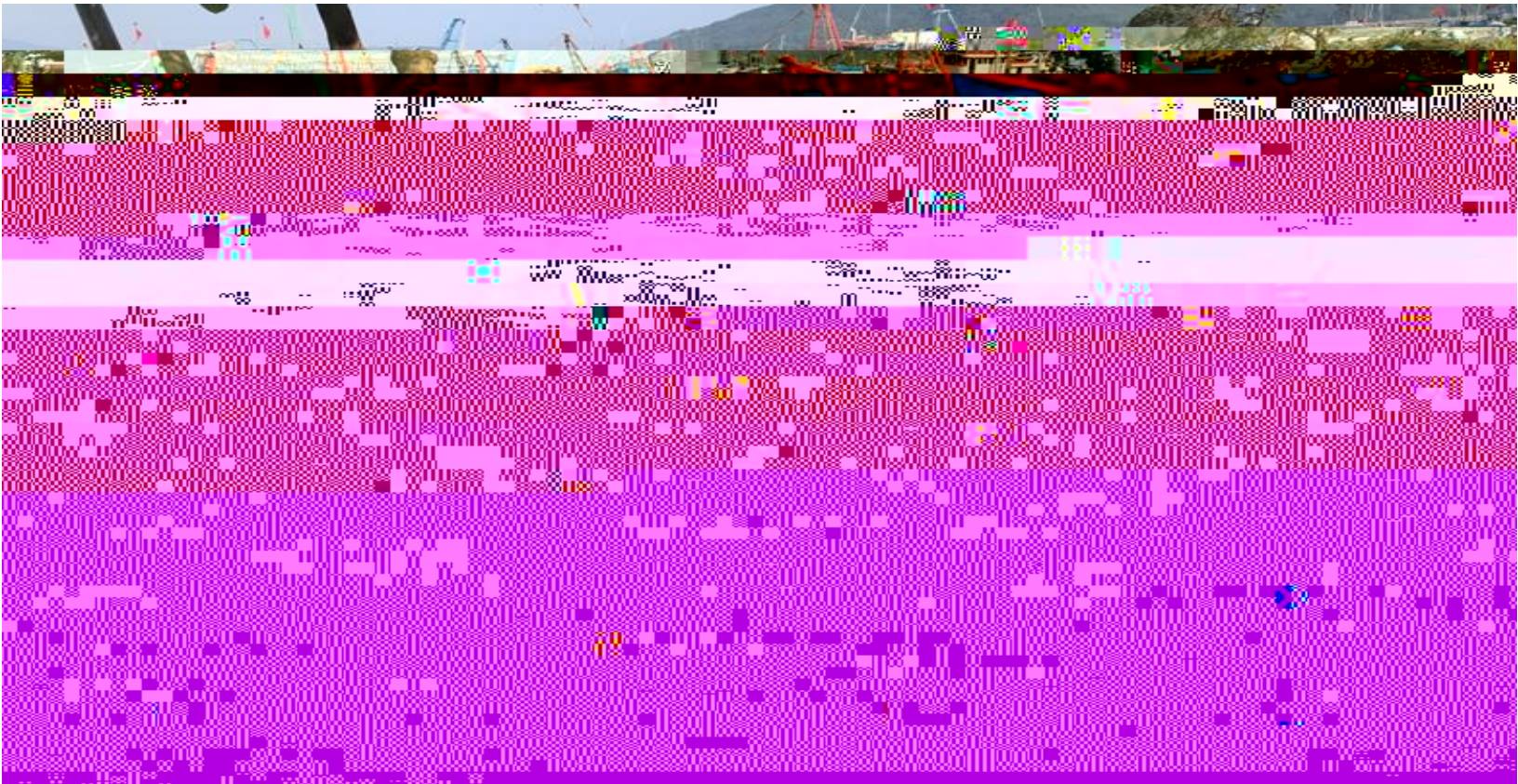




## **POLICY RECOMMENDATIONS**

Solid waste governance in Vu Gia – Thu Bon river basin and Da Nang – Quang Nam coastal area: from source-to-sea approach

Nguyen Chu Hoi, Bui Thi Thu Hien





## POLICY RECOMMENDATIONS

# SOLID WASTE GOVERNANCE IN VU GIA - THU BON RIVER BASIN AND DA NANG - QUANG NAM COASTAL AREA: FROM SOURCE-TO-SEA APPROACH

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Of the above-mentioned flows, solid waste management is considered as a core service to be provided by utilities and a crosscutting issue that can link directly to 12 out of 17 Sustainable Development Goals (SDGs), especially goals SDG 6 and SDG 14. Solid waste management requires that the two fundamental aspects of governance - "Who" and "How" are properly addressed in order to change behaviour and engage stakeholders<sup>6</sup>. Within the framework of SIWI-IUCN project, attention has been given to *solid waste governance in Vu Gia Thu Bon river basin following source-to-sea (S2S) approach*. A short-term national consultant has been recruited for the implementation of related activities with the main purposes of:

(i) Providing general understandings of the strengths, weaknesses, opportunities, and challenges of the current local governance system relating to solid waste management, with emphasis on plastic waste in Vu Gia – Thu Bon river basin and Da Nang – Quang Nam coastal area; and

(ii) Recommending necessary changes for improvement of the current governance situation in two localities through specific policy proposals.

This report of *policy recommendations* is the main output of the consultancy work related to solid waste governance, including plastic waste in Vu Gia

## I. BACKGROUND

1. Scope and object of the study

1.1. Geographical Scope



various coastal sites including Da Nang city, Cam Le commune, Tho Quang boat lock, communes along Tuy Loan river in Hoa Vang district; Hoi An city, Cam Thanh commune and Dien Ban district, Tam Ky city, Tam Hai II commune, Nui Thanh district, and along Thu Bon river in Duy Hai commune of Duy Xuyen district (Quang Nam province).

## 1.2. Issue Scope

Governance is analyzed to understand the context of disposal of solid wastes<sup>8</sup>, including plastic waste leakage; to determine the responsible agencies and individuals; the reasons and levels of engagement of local agencies and sectors. The study also provides an overall insight to



(among relevant stakeholders in the same locality and with other localities) and integration (integrate identified problems into specific programs and projects).

According to Mathews et al., (2019)<sup>11</sup>, in the source-to-sea approach, there are six key flows, including: *water, biota, sediment, pollutants, materials, and ecosystem services*. Within the framework of this SIWI-

related to governance, institutions, and policies on solid waste management in Vietnam in general and in the studied area in particular; results of related research by IUCN-HSF project on integrated management of Vu Gia - Thu Bon river basin and coastal area of Quang Nam – Da Nang, etc. Analyze secondary information to set orientation for the tasks to be done and issues to be added during the field survey in order to close existing information gaps. It is found out that, existing data of wastes in general and solid wastes, including plastic waste, in particular are unsystematic, not updated regularly and some are out-of-date. Within Vu Gia – Thu Bon river basin and Da Nang – Quang Nam coastal area, the most updated material about plastic waste is the report on “Plastic Waste Management in Vu Gia –Thu Bon basin: Report on quantitative and qualitative assessment characterizing plastic solid waste flows from Vu Gia – Thu Bon basin”.<sup>12</sup>

- Participate in related meetings and workshop organized by IUCN in collaboration with its partners (MONRE, SWAM, SIWI, Life Cycle Initiative, UN environment, GreenHub) regarding management and mitigation of solid wastes and plastic waste disposed to the sea in Vietnam, in Da Nang city and Quang Nam province. Through the meetings and workshops, related information, data, and initiatives were discussed and shared. As a member of the National Advisory Board (NAB) of the IUCN MarPlastics project and on integrated management of Vu Gia – Thu Bon river basin and coastal areas, the consultants had the chance to report, and discuss in important meetings and workshops of the JCC. Especially, during the field survey, in the afternoon of March 5<sup>th</sup>, 2020, the survey team participated in the workshop of the JCC on results of the activities in 2019 relating to integrated management of Vu Gia – Thu Bon river basin and coastal area of Quang Nam – Da Nang. Concluding the workshop, leaders of both localities<sup>13</sup> affirm their continuous priorities for mitigation and effective management of solid wastes (plastic waste) and wish the international organizations to continue their support.

*b. Stakeholder consultation:*

- During field surveys, the consultant conducted *target group interviews* which were selected previously with IUCN consultation and the SIWI-IUCN project reference. The questions regarding analysis of solid waste governance system, focusing on plastic waste, using source-to-sea approach were raised to all mentioned target groups. Depending on the functions, duties, and positions of each group and group members, different perceptions, assessments, and views about the same question or problem were provided. Therefore, the consultants could gather multi-dimensional, diversified, and comparative information. The number of people participating in the interviews varied in each group, with the minimum number of 2 people (due to their busy schedule and the Covid 19 pandemic) and the maximum number of 8 people. In addition to on-site results, we also received the information in form of written, copied, and PDF documents via email exchange after the survey. Main groups consulted and discussed during the field survey include: Division of Water Resource and Climate Change under the Environmental Protection Sub-Department of Da Nang Province (Da Nang DONRE), Division of Engineering Infrastructure (Da Nang DoC), and Provincial Sub-Department of Sea and Islands (Quang Nam DONRE).

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<sup>12</sup> RWA (2019). Plastic Waste Management in Vu Gia –Thu Bon basin: Report on quantitative and qualitative assessment characterizing plastic solid waste flows from Vu Gia –Thu Bon basin “from Source-to-Sea”. The draft in December 13, 2019.

<sup>13</sup> The workshop was co-chaired by Mr. Ho Ky Minh – Vice Chairman of Da Nang People’s Committee and Mr. Huynh Khanh Toan - Vice Chairman of Quang Nam People’s Committee.

- *Consultation with experts* of various sectors relating to management and governance of solid wastes, including plastic waste. Most of the consultations were with experts from NGOs operating in Da Nang and Quang Nam. Collected information is often objective, straightforward, and diversified depending on personal perspectives and experience of the experts. The experts are those representing EverGreen Labs on “circular economy” for plastic waste treatment; Center for Environment and Community Research (CECR) on general local awareness on source-to-sea; Zero Waste Alliance (ZWA), Keep Vietnam Clean and Green, RMIT Da Nang on community involvement, role and solutions for communication on enhanced awareness and knowledge for the communities; Thanh Dong Organic Farm, Cam Thanh commune (Hoi An) on plastic waste in clean agriculture; Green Youth Collective (GYC) on clean agriculture and plastic waste recycling by the blinds; Quang Nam Tourism Association on plastic waste in the province’s tourism industry and roles of the Association; An Nhien Farm on green agriculture and zero plastic waste model.

- *Consultations with provincial/city leaders* were conducted to get insights into the viewpoints, perception, and judgement of the leaders representing provincial/city People’s Committees regarding governance and management of solid wastes, including plastic waste. Consultations were also conducted with representatives of the JCC under Da Nang City on the role and operational performance, and possibility for modification of functions and duties of the JCC in order to effectively implement source-to-sea; with leaders of Economic Division of Hoi An City on landfill issue in Hoi An city and Quang Nam province; with representatives of Hoi An city authorities (URENCO Hoi An, Division of Natural Resources and Environment, Cu Lao Cham Marine Protected Area) on plastic waste issue and measures to mitigate plastic waste; with representatives of Quang Nam authorities (DONRE, DoC, DARD) on mechanisms, policies and institutions relating to state management of solid wastes, including plastic waste; etc.

c. *Field surveys:*

- *Field observation and description* during workshops and meetings before and during the field surveys to update information and proofs about the situation of solid and plastic wastes, as well as to record the evidence by taking real documentation photos. During this survey time, the consultant team had chance to visit the following sites: EverGreen Labs on some products using circular technology for plastics; Tho Quang Wharf – Da Nang on waste issues at the fishing wharf; Hoa Phong and Hoa Phuong communes along Tuy Loan river (Hoa Vang district, Da Nang) on solid waste collection; Thanh Dong Organic Farm, Training Club on waste recycling of An Nhien Farm; Triem Tay Garden (Dien Phuong commune, Dien Ban town, Quang Nam province); Duy Hai commune (Duy Xuyen district, Quang Nam province) along Thu Bon river on plastic wastes from fishing boats and

Quang Wharf on the capacity to buy,

## II. ACTUAL SITUATION OF SOLID WASTES IN VU GIA THU BON RIVER BASIN

### 1. Land-based pollution hotspot

Da Nang city and Quang Nam province are situated in a strategic location of the central economic region – one of the most dynamic developing economic zones of Vietnam recently, attracting attention of various investors, large transnational corporations, and companies worldwide. Da Nang city is considered the largest economic - political - cultural center of the Central Vietnam. The ancient Hoi An city of Quang Nam province, which is recognized as a World Heritage Site by UNESCO together with Cu Lao Cham form the Cu Lao Cham - Hoi An Biosphere Reserve. To the south, Tam Ky city together with Chu Lai coastal economic zone and Dung Quat economic zone (Quang Ngai) create an important “growth pole” of Quang Nam province and is the gateway to the ocean of provinces in the Central Highlands, Central and Southern Laos PDR. This is a region with various favourable conditions for investment attraction, technological and scientific development, economic and cultural exchange with other places in the country and with the world.

However, besides the economic benefits gained from the above-mentioned development advantages, Da Nang city and Quang Nam province are facing several environmental and natural resources issues, including wastes in general and solid wastes



Figure 3: Pollutants from different sources transported to the coastal area of Quang Nam - Da Nang (VASI IMER UNEP GPA, 2010)

## 2. Actual situation of solid wastes

In Vietnam, urbanization together with rapid economic and population growth are generating a huge amount of wastes, which has doubled in less than 15 years, with the estimated volume of over 27 million tons in 2015. With this rapid growth rate, it is estimated that the generation rate of domestic solid wastes is 8.4%/year of total solid wastes in urban areas and the total estimated increase is about 5% per year. The estimated waste volume in the whole country will increase to 54 million tons by 2030<sup>15</sup>.

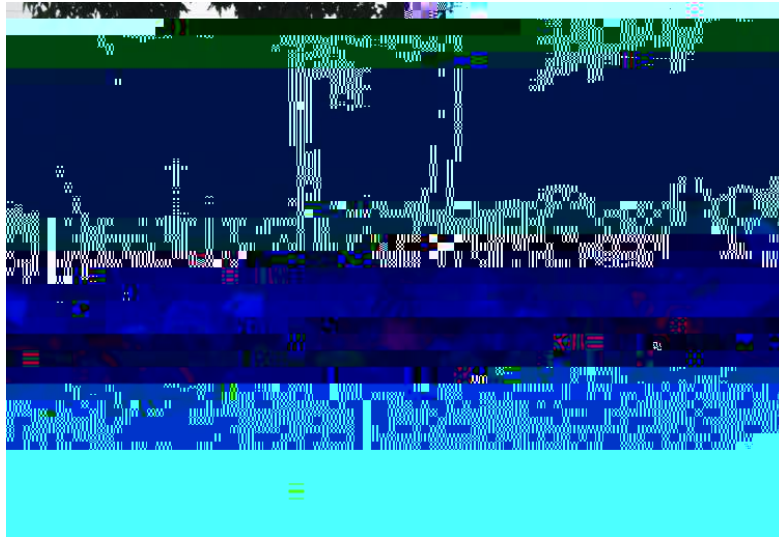
Da Nang city is now facing with the problem of increasing solid wastes. In 2016, there were about 780 - 800 tons of solid wastes generated each day within the city area. This number increased to about 900 - 930 tons/day in 2017 and to over 1,100 tons/day at present, while the rate of waste separation and recycling is only over 2%. Solid waste generation is estimated at over 1,800 tons/day for the period 2020 - 2025, over 2,400 tons/day for the period 2025 - 2030, and over 3,000 tons/day for the period 2030 - 2040<sup>16</sup>. At the same time, the volume of urban solid wastes generated in Da Nang city is significantly increasing: from 8 - 10%/year during the period 2007 - 2017 to nearly double



forecasted to be one of the biggest cities in Vietnam with rapidly increasing solid waste generation due to rapid urbanization and industrialization<sup>18</sup>.

In Quang Nam province, daily waste generation in the whole province is about 1,000 tons/day on average. About 400 m<sup>3</sup>/day of wastes are not collected, transported, and treated. Therefore, at present, the amount of untreated wastes in the entire Quang Nam province is about over 17,000 m<sup>3</sup>. Without measures for timely collection and treatment, the residential areas and roads will become "open dumping sites"<sup>19</sup> (Figure 4). In 2017, the total amount of domestic solid wastes generated in the whole province was about 921.3 ton/day, of which domestic solid wastes in rural areas was 564.4 tons/day (accounting for 61.3% of the total amount of solid wastes) and in urban area was 356.9 tons/day (accounting for 38,7%)<sup>20</sup>.

Regarding diversity of solid waste sources in Vu Gia – Thu Bon river basin, the research by RWA (2019) initially focused on examining three cluster types, including: rural area, urban area, and coastal area. Results of calculation show that, total solid waste generation is 1,649 tons/day, of which 338 tons/day are from rural area, 1,189 tons/day are from urban area, and 122 tons/day are from coastal area. In the study area, the total volume of plastic waste generated is 281 tons/day, of which 55 tons/



*Figure 4: Solid wastes accumulated throughout traffic routes, causing environment pollution and unbeautiful landscape*

Regarding waste composition, in Vietnam, about 60% of the wastes are organic wastes, about 16% are plastic wastes, 7% are glass, 6% are metals, 2% are paper, and 9% are mixed wastes (WB, 2012)<sup>22</sup>. In Da Nang – Quang Nam area, the proportion of plastic waste ranges from 8-16% of domestic solid wastes. In Da Nang city, regarding waste composition in general, the amount of solid wastes accounts for 16% - 17% and includes mainly plastic bags and bottles<sup>23</sup>. In Quang Nam province, about 70% of domestic wastes are biodegradable organic materials, about 14.5% are flammable materials, about 6.5% are inorganic materials such as Persistent Organic Pollutants (POPs) (plastic, leather, sponge) and 5.6% are inert substances (glass chips, ceramics)<sup>24</sup>.

### 3. Solid waste management and mitigation efforts

So far, planning for solid waste treatment of Da Nang city has not yet been suitable with the National Strategy, the main treatment technology is of burying, limited human resource, etc. Therefore, the priority of Da Nang city People's Committee is to manage solid wastes by focusing on three main groups of solutions: (i) waste separation at source,

and Hoa Tho with average capacity of 72 tons/day. In the whole city, there are 133 temporary stations for bins gathering and waste transferring. However, environmental sanitation in waste gathering stations is still in bad condition.

So far, in Da Nang city,, only Khanh Son Waste Treatment Plant receives domestic solid wastes and treats them using burying technology. However, this technology is out-of-date and possesses many limitations: it requires large area of land, fails to exploit and make use of the re

*Box 1: Piloting waste separation at source*

Recently, in Da Nang city, waste separation at source has been piloted for one year in Hai Chau district (Thuan Phuoc and Thach Thang wards) and in Thanh Khe district (Thanh Khe Tay and Hoa Khe wards). In Hai Chau district, 40,000 participating households are equipped by the city with waste collection tools and 80% of solid wastes have been collected and separated. The city is now carrying out assessment and learning from experience of Hai Chau model for replication and continuing to provide thousands of garbage bins and bags for the remaining districts<sup>29</sup>. In addition, the city has implemented the project "Ocean without plastic – the program of collection, separation, and recycle of solid wastes for a healthy community and green city" since mid-2018 in Son Tra district with an aim to "propagandize, guide, and encourage waste separation at source in 70 residential areas of seven wards with about 14,000 participating households<sup>30</sup>.



waterways is estimated to be around 31% of unmanaged plastic waste with the urban areas releasing only 19% due to their better collection services and coverage. Due to their large amount of waste generated this still accumulates to 714 ton/year. A total of 4,268 tons of plastic waste or 4% of the total plastic waste is estimated to enter the waterways in the Vu Gia – Thu Bon river basin yearly compared to total plastic waste generated. If put in relation to the population of the Vu Gia – Thu Bon river basin each person releases between 0,6kg/per (urban) and 4kg/per (rural) plastic waste entering waterways per year. This is equivalent to 120 (urban), 2.000 (rural) and 1.500 (coastal) plastic bags released per person per year<sup>36</sup>.

#### 4. Advantages and disadvantages of solid waste governance and management in Vu Gia – Thu Bon river basin

There are strengths and weaknesses, opportunities and threats in the solid waste governance and management in Vu Gia – Thu Bon river basin. The promoted SWOT analysis shows that the strengths 70.584 537.6ET Ei4 EMC /P ÅMCID 56 and ths

## 4.2. Disadvantages

- The amount of solid wastes is rapidly increasing, especially domestic and industrial solid wastes whose composition is more diversified and difficult to treat, which include hazardous and plastic wastes.

- Unequal development between areas (or cluster) in Vu Gia – Thu Bon river basin and the limited ability to link between the areas make it difficult to develop a large solid waste treatment complex with advanced technology and high capacity (input solid waste). Some garbage dumps have been built up (for example the Cam Ha garbage dump) and are potentially leaking to the sewers, rivers, and then to surrounding environment and the sea.

- For rural and mountainous areas: there is the lack of human resources for management and difficulties in socialization; the collection and transportation of wastes is very costly and it is very difficult to organize inter-regional treatment due to the complex geographic setting; low fee and small number of households paying fee make the service infeasible financially; at present, there are still environmentally unfriendly landfills in mountainous districts;

- The common situation of Da Nang city and Quang Nam province is the difficulty in finding the place for

### 4.3. Reasons for disadvantages

- As the area of unused land in Da Nang and Quang Nam province is not so big, the selection of site for solid waste treatment complex that ensures environmentally safe distance is very difficult. Therefore, most of the anticipated solid waste treatment plants can only ensure the safe distance of 500 m (meeting the requirement for incineration technology), and only a few sites in mountainous districts (Quang Nam) can ensure the safe distance of 1,000 m following the requirements of the burying technology. Thus, the majority of localities propose to use incineration technology, though this technology has potential risks during operation.

- Parts of the population still have limited awareness of environment protection, including plastic waste, due to irregular awareness activities; there are still many obstacles in encouraging local people to keep the environment clean, separate wastes at source, pay waste collection fees. Moreover, source-separation of domestic wastes is very difficult, which requires changes in waste disposal practices as well as synchronization of technical infrastructure (collection and transportation means and vehicles, treatment technology).

- Quang Nam province has a large area, complex and diverse terrain with plains, midlands, and high mountains. Therefore, the management of domestic wastes faces many difficulties including: the collection and transportation of wastes is very costly; inter-regionally centralized treatment of wastes is very difficult leading to the existence of various small-scale garbage dumps not operating in line with required procedures in mountainous districts.

- Limited human resource for solid waste management: The human resource involved in the management of solid wastes at all levels (from province to commune) comprises mainly the officers on concurrent job with the main task of environment protection, which does not meet the requirements for solid waste management; investment in environmental infrastructure is not responsive to actual development needs; funds allocated to districts are not enough for the organization and management of wastes in general and solid wastes in particular.

- Unprofessional waste services in rural and mountainous areas have resulted in increasing illegal waste disposal into open lands, river banks, and seaside. Increase in the use of disposable plastic bags/packaging due to their use convenience and cheap price results in a huge amount of plastic waste being disposed into the environment and sewers.

- Source-



*Box 3: The reason why local residents block access of garbage trucks to Tam Xuan II Landfill (Nui Thanh district, Quang Nam province)*

The reason local residents prevent URENCO garbage trucks entering Tam Xuan II Landfill is that: URENCO fails to thoroughly address the problem of unbearable stench coming from the landfill; initially local people were allowed to go into the landfill to collect recycle materials, however, this activity has been stopped in recent years; local people only accept wastes from Nui Thanh and reject those from other places. Consultation with communities directly impacted by the landfill (Bich Nam village) was not carried out during the planning stage, instead community consultation was only done with Bich Son village. When access to the landfill was blocked, URENCO failed to deal with the situation "wisely

### III. SOURCE-TO-SEA GOVERNANCE OF SOLID WASTES IN VU GIA - THU BON RIVER BASIN

#### 1. Legal framework for solid waste management

##### 1.1. General context

The administration system in Vietnam is divided into four levels, including: central level, provincial level (including centrally governed cities), district level (including district towns and provincially governed cities), and commune level (including wards/**townships**). At the provincial level, there are 5 centrally governed cities and 58 provinces, making up a total of 63 units, of which 28 units are in coastal areas. Centrally governed cities include: two special urban centers (Hanoi and Ho Chi Minh City) and three cities of type I (Hai Phong, Da Nang, and Can Tho). At the provincial level, there are 70 cities, 54 district towns, and 591 districts. At district level, there are 1,581 wards, 9,043 rural communes, and 590 townships. These levels are administered by the People's Councils and People's Committees of their corresponding levels. These levels play different roles in the management of solid wastes<sup>38</sup>.

In Vietnam, economic and population growth together with rapid urbanization have exacerbated the problem of wastes and have contributed to the annually increasing amount of wastes. Due to the limited institutional fD 134-2( )6(levels)5(p)-4(lay 9(t)-4w)13(w)5(ark(w)(8()-33(844 Tm9

there are different ministries involved. The MoC has the highest authority in management of municipal domestic solid wastes and determination of landfill locations. In addition, the Ministry also has the responsibility to manage normal construction wastes; specifically for burying. The responsibilities of the MoC include: (i) formulate policies and regulations; (ii) develop and guide the implementation of an investment program for solid waste treatment; (iii) formulate, review, guide, and supervise the planning of inter-provincial solid waste management; (iv) guide and monitor the development and management of the planning for the establishment of solid waste management facilities; (v) conduct the appraisal of the planning for solid waste management of centrally governed cities; (vi) organize investment promotion activities and provide guidance for investment in inter-provincial solid waste management facilities. However, the MONRE is the united state management body for environmental management, being responsible for formulating policies, strategies, and regulations as well as examining and supervising the implementation of the Report on Environmental Impact Assessment (EIA) and Report on Strategic Environmental Assessment (SEA), especially being responsible for management of hazardous wastes, waste management in general and environmental protection. In 2019, the Ministry of Natural Resources and Environment was assigned to be the focal point for integrated management of solid wastes<sup>40</sup>. However, a detailed division of duties and responsibilities between the two ministries is not clear at central or local levels.

Other key relevant ministries include: (i) Ministry of Health (MoH), being responsible for medical wastes. Responsibilities for waste management of this ministry include a basic



commented by the World Bank<sup>42</sup>, the achievements in municipal solid waste management are the results of the effectiveness of operation at local levels. Unfortunately, the limitations and shortcomings at local levels, including Da Nang city and Quang Nam province, are hindering the implementation of this policy. Specifically:

- Provincial Department of Natural Resources and Environments do not have enough human resources for the execution of their management, supervision and implementation functions.

- Big cities and towns solid waste management is normally decentralized to townships/districts. However, there are no clear guidelines or technical support from the provincial level. Moreover, there is also a lack of allocated resources.

- At present, the responsibilities for domestic solid waste management in rural areas (including role, functions, and responsible ministries) are not mentioned in government decrees. Management of rural domestic solid wastes is carried out by MARD as part of the New Rural Development Program<sup>43</sup>.

- In handicraft villages, there has been no clear division of the functions and responsibilities of the three relevant ministries regarding hygiene issues, including: Ministry of Agriculture and Rural Development, Ministry of Natural Resources and Environment, and Ministry of Science and Technology. In other words, this means that no ministry takes the lead.

- The private sector does not find it attractive to invest in solid waste management services due to the uncertainty of the legal framework, inconsistent implementation of regulations, low fees, and lack of reliable data, etc. In addition, ministries and branches are unable to effectively implement the policies on "privatization" due to unclear processes, a wide scope, and complicated procedures.

- Ministry of Construction and provincial Departments of Construction in many provinces have prepared the overall planning





water. Businesses are encouraged to make decisions towards reducing dependence on the Vu Gia river.

(iv) Leaders of the two localities have acknowledged the mobilization of scientists to participating more in dealing with the issues of Vu Gia – Thu Bon river basin.

(v) As a result of communication sharing among stakeholders and the buy-in of leaders, the stakeholders have shared information actively and acted jointly.

(vi) There is an active engagement of local business groups and companies operating hydropower in Vu Gia – Thu Bon river basin and a sharing of water resources/storage among the sectors for the dry season.

(vii) Initial funds relied on support from the projects. In the future, the Coordination Committee will arrange a separate budget for the activities and projects agreed by both localities (i.e.: improve efficiency of environmental monitoring system in the river basin, risk forecasting, regular information exchange; inter-household operation process).

(viii) Training activities have received greater attention and implementation according to the plan approved by the Coordination Committee.

#### 1.5. Laws and policies on solid waste management

The system of Vietnamese legal documents on solid waste management is very diverse, including: Law on Environmental Protection, some decrees, decisions and circulars on specific contents as well as relevant technical requirements. The governing law relating to solid wastes in Vietnam is the Law on Environmental Protection which was promulgated in 1993 and amended and supplemented many times; most recently the Law on Environmental Protection in 2014. At present, the new Law on Environmental Protection is being reviewed and amended to be submitted to the National Assembly for consideration. The Law on Environment



objectives for waste classification and recycling. The World Bank (2018)<sup>50</sup> states that the decrees promulgated at the ministerial level are primarily concerned with landfills, waste-to-energy treatment plants, ntstDr wTJ -260(T-4(re)-2(a)9ech)6(-260(264(wlogyETBa)9rt)-4(ives



*Figure 6: The rubbish bins are overloaded (photo by Nguyen Chu Hoi, Mar 2020)*

*Box 6: Where do solid wastes go?*

Fishing boats go to the sea for about 10 days before returning to the port to sell fish. The fishing ground is in the adjoining sea and sometimes in the open seas of Hoang Sa (Paracel Islands), Truong Sa (Spratly Islands). The ice used to marinate fishes is "mild" so when the boats arrive at the port, the fish sold to traders are often "unfrozen". The income is 20 million VND/person/sea





documents rather than on measures for management decentralization, mitigation and treatment of solid wastes at district, commune and community levels, including incentive policies and mechanisms for such activities. The involvement of enterprises is still very limited, partly due to the lack of policy for the management of solid waste using an integrated approach, which includes management of the waste lifecycle (from manufacturing, consumption, use, disposal, collection, transportation, and treatment of wastes). Therefore, the districts, communes, and communities still perform the assigned tasks but only at the level of “passive reaction” rather than “proactive response” against solid waste issues. In both localities, URENCO plays a prominent role in directly collecting and transporting solid wastes, including plastic waste, in urban, coastal, and rural-urban areas. In mountainous areas and island communes like Cu Lao Cham, a local waste collection team is responsible for this.

As stated, the success of solid waste management and governance is linked closely to the performance of local levels, communities, and private businesses. Therefore, a plan developed by the city/province cannot be successful if it is not implemented by the district and lower levels. Moreover, solid waste management is still fragmented without sufficient coordination between

listen" is still very common. Which mechanisms are in place to solve this problem? Is there a need for people and resources?

*Source: Discussion with Ms. Huynh Thi Lieu Hoa, representative in the Central Region of the Center for Environment and Community Research (CECR), former Deputy Director of Da Nang DONRE (March 5<sup>th</sup>, 2020).*

Hoi An city alone has 17 scrap facilities which buy about 3,000 kg of recyclable wastes everyday, accounting for approximately 4.6% of the total waste generation in the city. This rate is quite low compared to other cities<sup>59</sup>. Only 9 facilities have received guidance to register their operation and prepare the environment profile, the rest are still in the preparation process. The total area of storage rooms in these 17 facilities is 2,120 m<sup>2</sup>, which is 163 m<sup>2</sup>/facility on average. These facilities buy recyclable wastes year-round, carry out pre-treatment and packaging before transferring to manufacturing plants in other cities<sup>60</sup>.

*Box 8: Operation of the informal waste collection group*

This is a private group formed by Ms. Hai "spontaneously" purchasing plastic wastes with a cheap price.

and *community role*<sup>61</sup>. In reality, both men and women have the ability to take part in all three roles at different levels (more, less; primary, secondary). A deeper understanding of these gender roles helps us to design appropriate activities for both men and women, from which to attract their effective involvement and, at the same time, contribute to reducing gender-based inequality in the division of social labor. The tasks responsible for each group, especially women, have an impact on their position, opportunity, and quality of life.

In solid waste management in Vu Gia – Thu Bon river basin, there are significant differences regarding the involvement of men and women in the management process. Besides participating in the reproduction role (giving birth, raising children, doing houseworks, ...), women in rural, urban, and coastal areas of Da Nang and Quang Nam are also actively involved in the production role and partly in the community role. Rapid field surveys observation and statistics show that, over 60% on average of people using materials from waste and disposal if waste are woman. The rate increases to approximately 80% for the case of women being housewives and retail traders in the market. However, it is women who are actively involved in the management and mitigation of solid wastes, including plastic waste, i.e.: over 90% of women working as pickers, collecting solid and plastic scraps; about 40% of women participating in activities in waste treatment facilities; about 50% of women working as leaders or officers in government agencies of Da Nang and Quang Nam with responsibilities relating to source-to-sea management of solid wastes. In addition, about 80% of women play a key role in foreign organizations, local and international NGOs in coordinating and guiding the implementation of projects, conferences and workshops on solid wastes and plastic waste from source to sea in Vu Gia – Thu Bon river basin.

The above gender analysis shows that women play a very important role in dealing with solid waste flow in Vu Gia – Thu Bon river basin and there should be incentives to encourage and enable women to participate more in management of solid waste lifecycle. Women need to be encouraged to gradually change and reduce their practices of using plastic and the disposal of wastes to the surrounding environment, especially to sewers, canals, rivers and streams, and public places. Women play a core role and take the lead in persuading local communities to “say no to plastic bags”, participate in the reuse of scraps to turn wastes into commodities. Therefore, a gender equality policy with incentive for female pickers in landfills is needed to have suitable working conditions and health insurance, to help them escape from poverty and improve family living standards. References to gender issues in sustainable poverty reduction<sup>62</sup> shows that there is the need to integrate gender into the programmes/plans, into steps/activities of solid waste management in Vu Gia – Thu Bon river basin which is reflected through mechani

superficial treatment of open waste, from overlaps or gaps of management mechanism and policies. In 2019, the RWA consultant team<sup>63</sup> described the impacts of plastic waste pollution within Vu Gia – Thu Bon river basin, however, the description was very brief so the real impacts have not yet been fully evaluated. Rapid assessment shows that plastic wastes are disposed of into sewers, beaches, wharfs, and seaside, etc. and people have “carelessly” turned the rivers



respective management agencies at national level has created a diversity in implementation at

## IV. ASSESSMENT OF SOLID WASTE GOVERNANCE EFFECTIVENESS AND POLICY RECOMMENDATIONS

### 1. Solid waste governance at local level

#### 1.1. Coordination mechanism and engagement commitments of stakeholders and actors

The above results of stakeholder assessment show that there are various stakeholders involved in source-to-sea governance and management of solid waste flow in Vu Gia – Thu Bon river basin and Quang Nam – Da Nang coastal area. However, in reality, there is still the lack of necessary and effective coordination for management of solid waste at the source, especially plastic waste, in all three areas: rural / mountainous area, urban area, and coastal area. The lack of clear regulations that encourage the involvement of stakeholders as analyzed above, together with institutional fragmentation between the stages of waste flow: management, production, final treatment (waste treatment, waste recycling) are the reasons why “good management” of solid waste in this area has not been achieved. In reality, the management stage just follows the duties “assigned by the superiors”, while the production stage which “generates wastes” and the treatment stage (executors) are mainly self-reliant and spontaneous in the way of “You do your job and I’ll do mine”, with very limited support from local government, especially minimum and necessary legal support. These gaps in solid waste governance should be closed and adjusted in the coming time to enable and engage stakeholders in the solid waste governance process in both localities.

In Da Nang city and the Quang Nam province, waste in general (solid waste in particular, including plastic litter), are becoming a “pressing” issue while priority attention is given to other problems.

#### *Box 10: Towards the circular economy in two localities*

As part of IUCN - MarPlasticcs' pilot circular economy project, Evergreen Lab (EGL) was selected and implemented to collect low/non value plastic waste in Cu Lao Cham Island, Hoi An City for up recycling and produce the tradable value products. Input materials from low-



*Figure 8: Tabletop and flowerpot made from plastic flat panels recycled from plastic wastes (Photo: Nguyen Chu Hoi, March 2020)*

## 1.2. Engagement of private sector and NGOs

The private sector, primarily businesses, are the "culprits" who produce, distribute and discharge solid wastes, including plastic litter, into river, coastal, and sea environments (accidentally/intentionally, directly/indirectly), the vast majority are "being left out" due to the "gaps" of solid waste and environmental management systems or deliberately neglecting their responsibility for the longevity of rivers and seas. The businesses involved in the treatment, recycling, and reuse of solid and plastic waste in two localities are not encouraged and supported adequately in terms of legislation, resources, infrastructure, and technology. Therefore, though these businesses are actively dealing with one stage of the waste life cycle to



In the Quang Nam province, in 2019, the Provincial Party Committee issued a Directive to mobilize and request the entire political system to take part in an initiative,<sup>68</sup> starting by enhancing awareness for residential clusters in the markets and within the framework of the new rural development plan. People going to the market are encouraged to bring plastic baskets or other materials that can be used several times; social and mass organizations have participated many times in this activity, some businesses have solutions for plastic replacement. Quang Nam province has approximately 1.5 million inhabitants with the majority living scattered between rural, mountainous, and coastal areas. However, the province has only focused on planning for large waste collection and treatment systems in urban areas, without small and separated areas being linked to general planning. Agriculture cultivation and aquaculture in the Quang Nam province are the two sectors that are much related to waste and solid waste, including plastic waste. Therefore, the province's policy is to develop organic agriculture, while in the immediate future, waste from cultivation activities are often buried. The province also carries out propaganda activities and sets up local waste gathering points. However, there is still the lack of a general collection mechanism for URENCO to access small waste collection points. Cage aquaculture is carried out mainly in big rivers, lakes and hydroelectric lakes in the river basin and in coastal areas, so waste is still discharged into rivers, lakes, and the surrounding environment. Solid waste is still collected and transported to common waste collection points, however the collection rate is not high; attention is not given to the assessment of fisheries and the fishing wharf. The province has the project of rural waste for remote areas, the communes set up waste collection teams to collect waste and transport it to URENCO's gathering points. Waste management can be integrated into the New Rural

Table 1: Summary of some governance principles for solid wastes in Vu Gia – Thu Bon river basin and Quang Nam – Da Nang coastal area

<i>Principle</i>	<i>Preliminary assessment</i>
Ensured transparency	There have been promises with people in some documents submitted to

with the movement of fighting/reducing plastic pollution but attention





evaluations, especially punishments against violations after the assessment are still mild. Both localities have also set up a communication channel on environment, but it is not exclusive for the issue of solid wastes (for example website) where profiles and reports on performance of management and mitigation of solid wastes can be accessed. In addition, though the city and province have set up a feed

stakeholders and local communities. The approach is still mainly top-down. Therefore, only the agencies within the state governance system implement these planning and plans. The evaluation, revision of planning and action plans for solid waste management, if necessary, are normally implemented by the same agencies developing them, other stakeholders and communities stand "on the sidelines". This also affects the mobilization of further resources, including financial resources for solid waste management in both localities, as well as the ability to provide stable financial resources, apart from state funds.

#### 2.4. Level of enforcement and compliance with laws and policies on solid waste management

Regarding "good governance" of solid wastes (including plastic waste), besides the efforts in promulgating legal documents, it is necessary to evaluate the level of enforcement and compliance with these documents. The above analyses show that, in addition to positive regulations, there are still overlaps of functions and duties among the agencies within the state management system of solid wastes. This affects the effective implementation of legal documents, especially in coordination for implementation and decision making regarding solid and plastic wastes in the area. Even, "dispersed implementation and execution of solid waste management framework, overlaps and conflicts in authority and management regulations are biggest challenges". Moreover, the lack of strong decentralization to commune level – the source of waste generation, and a mechanism to encourage and engage local people and other stakeholders has limited the authority of the "close-to-the-people" administrative apparatus and "potential partners" in dealing with issues related to solid (plastic) wastes locally. Therefore, it seems that central and provincial/city management agencies have both the authority to promulgate laws and policies and responsibility to implement and evaluate performance, with limited human resources, while the people and other stakeholder groups are only "informal forces" in the fight against solid/plastic wastes.

Essentially, it is very difficult to change the habit of accidentally or intentionally discharging wastes, especially the habit of using plastic utensils and disposable plastic bags due

wastes at lower levels, especially commune level, are “beyond the reach” of the state governance system. Moreover, due to the diversity and diffusion of management authority,

means of waste collection as well as planning of dumping sites; supervise and monitor waste separation at source. Science and technology have been ap



(vii) Minimum required financial resources and separate budget need to be arranged to maintain the operation of the JCC and implementation of inter-provincial projects agreed and planned for implementation by the JCC;

(viii) Inspection and supervision mechanism of the JCC and mechanism of receiving public feedback on pressing issues in the river basin and coastal and sea areas;

(ix) Coordination and mobilization of international funding to strengthen capacity of the JCC and quality of the Committee's human resource; to provide technical support for projects/key missions;

(x) Regarding the participation of relevant central agencies in the JCC (as members, observers) or in activities of the

"superiors instruct, inferior levels do not listen". To ensure effectiveness and efficiency of this governance system, the development and implementation of the interdisciplinary coordination





## CONCLUSION

Solid wastes, including plastic waste, have become a global “problem” and in our country in general, as well as in Vu Gia – Thu Bon river basin and Quang Nam – Da Nang coastal area in particular. Recently, rapid socio-economic growth has resulted in an increasing amount of solid wastes, including plastic waste which is now becoming big challenges to the economy, society and environment of two localities.

Plastics are discharged into the environment at various stages in their life cycle. The studies reveal that pollution source from the river to the sea accounts to 88%-95% of the total annual ocean plastic pollution<sup>72</sup>. Plastic pollution is a challenge associated with all stages from production, consumption, and management of wastes that need to be solved from the root of the problem. There is no concrete solution that can immediately deal with the problem of solid/plastic waste pollution, instead a group of solutions relating to policies, laws, techniques, technology, economy, society, environment and awareness raising for all levels, ... needs to be developed at the same time

Within the framework of Vu Gia – Thu Bon river basin and Quang Nam – Da Nang coastal area, the consultant team recommends that the JCC continues to include the task of reducing plastic waste pollution into the prioritized plan of both localities and approaches management by geographic region, from upstream to downstream, from mountainous and rural to urban and coastal areas. At the same time, management and mitigations from input should be strengthened, i.e. limited use, replacement or waste sorting, collection, recycle, and synchronized treatment rather than output processing which is both costly and inefficient.

Although great efforts have been made, so far, the responses in terms of infrastructure, policies and mechanism, and solid waste governance system of both localities have not been commensurate with the needs of an integrated, efficient and sustainable economy. Fast filling up of landfills has broken through the original walls and destroyed the surrounding landscape,

policies on solid waste, plastic waste, while the authority lacks both financial and human resources.

With interest and experiences of managing water resources, activities in the basin (share water, agriculture, floods control, hydro-power plants etc.) following source-to-sea approach, two localities should also consider pollution flow management (plastic waste) following this source-to-sea approach. Recently, tackling plastic pollution is a local priority, so this is a good time to guide local interest in the source-to-sea management approach. Newly implemented and in the testing phase and related to the plastic pollution stream, it will take time to deploy and implement at all management levels.

Therefore, Vietnam and the two localities should continue to finalize the system of laws and policies for source-to-sea integrated management of solid wastes; support state governance of solid wastes through promoting the role of shared governance on the basis of stakeholders coordination; and practice community governance based on the commitment of communities with the authority/agencies responsible for solid and plastic waste management.